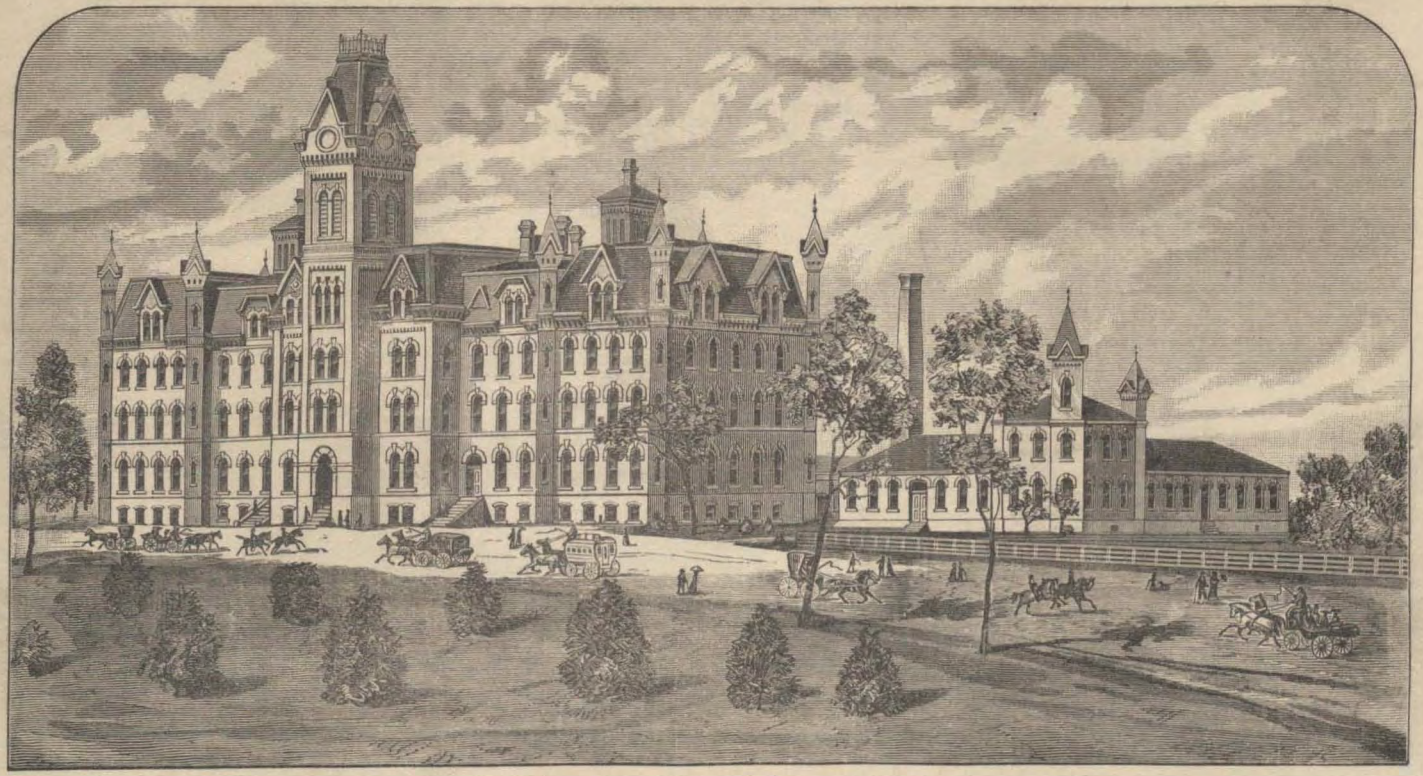

OHIO STATE UNIVERSITY.

TENTH ANNUAL REPORT

OF THE

BOARD OF TRUSTEES

OF THE

OHIO STATE UNIVERSITY,

TO THE

Governor of the State of Ohio.

FOR THE YEAR 1880.

COLUMBUS, OHIO:
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1881.

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To His Excellency, CHARLES FOSTER,

Governor of Ohio:

SIR: According to the requirements of law, I have the honor to transmit herewith the Tenth Annual Report of the Board of Trustees of the Ohio State University.

Very respectfully, your ob't serv't,

ALBERT ALLEN,

Secretary of the Board.

REPORT OF TRUSTEES.

It is an evidence of a liberal, progressive spirit upon the part of a State to provide and maintain a great Institution of Learning, free to all her citizens. The honor, however, of such a deed can never become illustrious until its beneficial results can be seen and felt in the varied pursuits of her people. The Ohio State University, with her valuable farm and buildings, her endowments, equipments, and provisions for broad and liberal instruction, can only work out the destiny so hopefully projected in her establishment, when the channels or avenues through which she is to disseminate her instructions become available. The adaptation of a piece of machinery to the performance of a certain work may be admirable, and the capabilities of the mechanic who operates it be unquestioned, yet in the absence of proper material upon which to operate, the skill of the mechanic, and the machine (so far as the purpose for which it was designed is concerned), are both valueless. The presence of this material in the educational work-shop of a well-equipped institution, under the intelligent guidance of a trained corps of instructors, is *the condition* upon which its utility and value depend in giving intelligence, power, and wealth to a people. It is, therefore, with great pleasure, that the Board can report an unprecedented increase in the number of students at the beginning of the present term, there being 235 in actual attendance. Of these, 105 are new students, the whole number representing 61 counties in Ohio, and 5 from other states.

This encouraging influx, the Board feels, may be ascribed to placing the institution upon a more emphatic basis, as regards *industrial* education; a fuller appreciation, and more enlarged views upon the part of the people, as to the advantages of skilled labor of all kinds; and to a wider publication of the attractive features belonging to the institution. In seeking to bring about this result, the Board, realizing the responsibility of the trust, has spared no pains to ascertain the preponderance of public opinion regarding the range of instruction which should be given in the University. Conference with leading men through the State, engaged in different pursuits, and interested in such matters, revealed the fact that there was no concurrent sentiment on the subject, but that each, almost without exception, manifested a preference for the aggran-

dizement of that special department most nearly related to his individual vocation. This very natural partiality for one's own calling, and a failure to appreciate the merit of other professions and occupations, have in some instances provoked unwarranted predjudice against, and opposition to the college, and which, if yielded to, would dwarf the growth of the institution to limits utterly too narrow for a great State enterprise looking to the good of all classes. The wisdom and clear foresight of Congress were never more fully indicated in any enactment looking to the interest and well-being of a people in their diversified pursuits, than when it determined and declared concerning this matter that, "the leading objects shall be without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to *agriculture* and the *mechanic arts*, in such a manner as the legislatures of the states may respectively prescribe, in order to promote the *liberal* and *practical* education of the *industrial classes* in the several *pursuits* and *professions of life*."

The Board cannot but believe that the present instances of popularity and prosperity are but the beginning of that success which the institution will attain in a few years, under wise administration of its affairs, and a firm adherence to this impartial legislation.

Without calling attention to the condition and course of instruction taught in the other several departments of the University, organized several years ago (all which will appear in the reports of the President and Professors), allusions may be pertinently made to the

ART DEPARTMENT.

Heretofore instruction in Free-hand and Mechanical Drawing has been given. The new Art Department is projected upon a broader *utilitarian basis*, and contemplates instruction not only in drawing and painting, but also in designing, modeling, engraving, etc. It is not designed to make it a school for the culture of *liberal* or *fine* arts, so much as for *technical* instruction in the *useful* arts; to make the *artisan* rather than the *artist*; and to impart that form of knowledge essential to skill and taste in the architect, the bridge and ship-builder, the mason, the machinist, the engraver, the cabinet-maker, the decorator and designer of textile fabrics, and every kind of artisan in the catalogue of human industries.

Our costliest and largest importations of manufactured articles from foreign countries, and especially France, do not derive their chief value from either the quality or quantity of the raw material of which they are composed, but from the amount and character of the *tasteful* and *skilled*

labor employed in their production. It is this skill that increases the value of labor so greatly, and constitutes in countries poor in soil and in natural production, a source of immense *material* wealth. Here, in Ohio, where the natural productions exist in such abundance, upon which the laborer subsists, and upon which he operates, this element of material wealth should be greatly conserved.

If, as has been wisely said, that "education is the fitting of youth for the occupations of adult life, and the duties of good citizenship," and that the uniform demand for the products of *skilled* labor, in our markets, is already turning our industries in that direction, no scheme of education can be regarded as complete, that does not embrace art culture.

Mr. Wm. A. Mason, of Cambridge, Massachusetts, a graduate of the highest standing in the Massachusetts Normal Art School, has been called by the Board to take charge of this Department as Assistant Professor. The necessary equipment is being provided as rapidly as possible.

The views and purposes of the Board touching the treatment of Agriculture may be understood from the following extracts taken from open letters, addressed by President Johnson to Professor Townshend. In his letter of June 24, 1880, he says:

The Trustees of the University, after mature consideration of the subject, on yesterday, determined to restore you to the entire control and supervision of the Agricultural Department of farm management, including especially experimental tests upon the grounds connected with the University so well adapted to that purpose. I am authorized by the Board of Trustees, with great unanimity, to say that in thus restoring you to this responsible position that it is the earnest request of the Board that the department of Agriculture in the Ohio State University be upheld and pushed so as to reach the highest point for teaching Scientific Agriculture to which the subject and means within your reach shall be attainable.

At your request the Board has made an appropriation to aid you in the payment of traveling expenses to enable you to examine other institutions and to meet other men connected with scientific agriculture in order to qualify you more especially for this work.

You are also aware that the Trustees have just made an appropriation of $1,000 for the purchase of a model of a horse for use in your department, to enable you to teach Veterinary Surgery and Medicine with greater facility.

Be assured that the Trustees fully appreciate the immense value of Scientific Agriculture throughout our entire country, and especially in the State of Ohio, the commercial gate-way between the Atlantic and Pacific States.

It is with very great pleasure that the Trustees recognize the determination of the farmers of Ohio to demand that your department shall be brought up abreast with the other departments of science and learning now so well carried forward in the University.

If, by the adoption of this resolution of the Board, the additional duties imposed should make it proper to relieve you from teaching botany, proper (not economic), in order to give your undivided time and energies to the department especially confided to your care, the Trustees are ready and anxious to afford you every facility to enable you to bring up your department to the highest point of usefulness contemplated in the establishment of the college.

In a subsequent letter he says:

I have just read with pleasure a communication written by you, published in the *Ohio State Journal* of the 1st instant, giving an account of a meeting of Professors of Agriculture representing several colleges of the Western States, at the Illinois Industrial University, on the 22d, 23d and 24th ultimo. The subjects discussed at this meeting, as given by you in the article published, impress me with the importance of more thorough and systematic work in the Agricultural Department of the Ohio State University, and by reason thereof I have no doubt you will be able to submit plans and recommendations which will be of lasting and substantial value in the future management of the Agricultural Department of which you are the head.

I am fully aware that in thus calling upon you for detailed plans and suggestions, to be submitted to the Trustees, that the subject will require much consideration, careful study, and patient investigation; but the time has come, in my opinion, when a thorough policy and systematic experimental tests, in connection with your department, and the farm under your control, must be adopted, and to be successful must, at all times, challenge criticism from intelligent farmers of Ohio, and elsewhere, as to its management.

The report, submitted by Dr. Townshend on his return from the visit alluded to above, contains many valuable suggestions, which will be carried into practical operation in that important branch of education.

The third course of free lectures "On the Application of Science to Agriculture," for the benefit of farmers, will begin January 11, 1881. These lectures have been well attended and favorably received.

The equipment of the mechanical laboratory embraces all the machinery now necessary to the practical training of young men fitting themselves for the work of the mechanical engineer. The number now receiving instruction and training here is 21. No expenditure of money upon the part of the State is calculated to yield a more satisfactory return than that employed in building and equipping this laboratory. The building is admirably adapted to the object contemplated, admitting that orderly arrangement of work-benches, tools, vises, and other machinery of all necessary kinds, demanded alike by good taste and system in our well-conducted work-shops.

The amplification of this department has required so greatly the attention and energies of Professor Robinson, who is also in charge of the school of Physics, as to render the appointment of a separate Professor to the chair of Physics, imperative. The Board, anticipating the fulfillment of Prof. T. C. Mendenhall's engagement with the Government of Japan, and being advised of his willingness to return to his former field of labor, elected him to the Professorship of Physics; his term to begin with the opening of the College-year in September, 1881. Professor Mendenhall held this position in the University from its organization until June, 1878, with signal ability, and great advantage to the State, and his re-appointment has met with great favor.

A superior equatorial telescope, with an aperture of five inches, magnifying from 50 to 300 diameters, has been ordered for the outfit of the Mathematical Department, and the entire amount of chemicals needed during the coming year has been purchased and received from Europe. Under the provisions of the general government these articles can be imported for the use of colleges, free of duty, and as it is desirable to furnish the students with laboratory material, at as low a cost as possible, the direct importation was authorized through Professor Norton.

The act making *military drill optional* with the students, was repealed by the last Legislature, and it is now, by action of the Trustees, made *compulsory* on all male students connected with the University, with the exception of such as are physically unfitted, such as may be excused by the President of the University upon reasonable grounds, and the regular members of the Junior and Senior classes. From 140 to 145, inclusive of the band, are now in the drill.

A room in the west end of the main building, corresponding to the one occupied in the east end by the Alcyone Society, has been fitted up for the Horton Society. Both have been handsomely furnished by their respective memberships, and the large attendance upon the regular meetings indicate the deep interest felt in these important auxiliaries to student-culture and discipline.

The large dormitory, which is under the control of President Orton as a club-house for students, was occupied last year by thirty-three young men. The advantages of a cheap rate of board to many good students whose circumstances require strict economy, and the prevailing good order observed throughout the past session by the club, has rendered the continuance of the building for this purpose very desirable. To this end a few additional rooms have been partially furnished, and all the old ones rendered more comfortable and attractive. All the furnished rooms are now occupied, there being forty-seven students in the club.

The sales of *Virginia Military Lands* during the year will not aggregate as much as during the previous year, owing to the fact of a large sale of over 11,000 acres in Scioto county to a single purchaser last year, which swelled the amount much beyond the annual sales of other years. With the return, however, of business prosperity, and a surplus of unemployed capital offered at a low rate of interest, the sale of land, in small parcels, has been steadily going on, and the payment on the sales, as well as on notes past due on previous sales, have been more promptly made.

Under the terms and conditions fixed by statute, $12{,}544\frac{23}{100}$ acres have been sold since November 15, 1879. The cash payments made on these, and on notes given by purchases concluded prior to that date, amount, since November 15, 1879, to $7,285.08.

In Chapter 13, Section 8433, Revised Statutes, it is provided that "the proceeds of the sales of all such lands, after payment out of the same of all the necessary expenses of survey and sale, shall be certified into the treasury of said State as provided by law, and the same shall be placed to the irreducible fund of said college, and shall form a part of said irreducible debt of the State, on which the interest shall be computed semi-annually, and paid to said college as may be ordered by the Board of Trustees; and they shall annually report to the Governor a detailed statement of receipts and disbursements in the execution of trusts created under the provisions of this act."

Although all of these lands are not yet sold, the Board thought proper, at its meeting on the 17th of June last, to order, "that, in pursuance of Section 8433, Revised Statutes of Ohio, the Treasurer be and is hereby instructed to certify into the Treasury of State, to be placed to the credit of the irreducible fund of the University, twelve thousand and seventy-three dollars and twenty-eight cents ($12,073.28), being the net proceeds derived from the sale of Virginia Military Lands, as shown by the Treasurer's statement of said account November 15, 1879, page 85 of the Ninth Annual Report of the Ohio State University."

By direction of the Board, the Secretary has prepared a register, containing a complete detailed statement of the Virginia Military Lands, showing the number of lots, number of acres in each lot, the appraised value per acre, and, if sold since Nov. 15, 1878, to whom and at what price; also, the cash payments, and the number and amount of notes in the hands of the Treasurer, and when payable; said book to be kept for reference and further entry as may be demanded. The earlier transactions in these lands gathered, as some of them were, from unofficial sources, may not be entirely correct, but those relating to transac-

tions occurring since the appointment of the present Board are deemed strictly accurate. Since the 1st of January, 1878, 26,715$\frac{50}{100}$ acres have been sold for the sum of $22,319.08, while the receipts from sale of these, and on notes for purchases made previous to that time, were $16,712.41. There yet remains of discovered lands 10,751$\frac{20}{100}$ acres unsold. Some few lots have been recovered by suit, on which the cash payment was made, but the purchasers were unable to pay the notes given by them. No new discoveries to any great extent have been made.

The General Assembly, on the 27th of February last, made an appropriation of $5,150.90 "to reimburse the Ohio State University moneys expended in paying the reasonable and necessary expenses of the Trustees while engaged in the discharge of their official duties." This amount represented the entire expenses of the Trustees from the initial date (1870) of the University to November 15, 1879. Additional appropriations, made on the 15th of April, are as follows: For "expenses of Trustees," $350; for farm improvements and stock, $1,500; for supplies for Mining Department, $500; for wall and table-cases in the Geological Museum, $1,000.

The support furnished through these and other appropriations of the previous session have enabled the Board to elevate the status of the University in many respects.

For a more extended and detailed statement of the condition and management of the University, your attention is respectfully invited to the accompanying reports of the President and Professors, the Farm Superintendent, Treasurer, and a transcript of the proceedings of the Board during the fiscal year.

ALBERT ALLEN, *Secretary.*

REPORT OF THE PRESIDENT.

HON. STEPHEN JOHNSTON,

President of Board of Trustees of Ohio State University:

DEAR SIR: I herewith present my eighth annual report, which covers the calendar year that ends November 15, 1880. The fiscal year of the College, by which we have been governed thus far in making our reports, does not match very well with the collegiate year, as it includes parts of four college terms, and of two college years. On this account, it is sometimes objected to our reports, and especially to our catalogues, that the actual state of the College cannot be made out from them. It does not seem to me that there has been any good foundation for this complaint, for the statements made by the several Professors as to their respective departments have always been so detailed and explicit, that the careful reader could have no difficulty in understanding the condition of the several parts, and thus of the whole institution. To remove, however, such grounds of complaint, I will supplement the statements that I have been accustomed to make by one or two more, that will leave no room for ambiguity or uncertainty as to the attendance and distribution of work at the University during the time covered by the report.

During the four terms included in the year ending November 15, 1880, there have been three hundred (300) students in the institution. The names of these students appear in the catalogue that follows the report.

The attendance during the three terms of the last college year, (September 17, 1879, to June 23, 1880,) was as follows:

Fall term—September 17 to December 23	195
Winter term—January 8 to March 31	181
Spring term—April 8 to June 23	162
Whole number of students during the year	217

A summary of the class lists of the several departments is appended, which indicates the distribution of the students among these departments. The amount of work done in the several subjects of study named is not, however, necessarily proportioned to the number reported in the

departments, for the reason that some of the classes last but a single term, while others are maintained through the year. It is, also, to be observed, that the largest classes in an institution like this are naturally the lowest classes, and the departments that have the preparatory work to do must, consequently, report the highest enrollment. The departments are named in the order of their establishment:

Geology	54
Chemistry	99
Modern Languages	90
Agriculture and Botany	61
Mathematics and Civil Engineering	156
Zoology	113
Military Science and Mathematics	25
Physics and Mechanics	72
Latin and Greek	87
Mining and Metallurgy	30
History and Philosophy	150
Drawing	75
The number of students regularly admitted to the several departments of the College, during the present term, is	235
Of this number, there are, at the present date, on the College roll	228

Nearly one-half of this number are now in the College for the first time, and it is gratifying to note that nearly fifty of the new students were able to enter the Preparatory Department without examination, by availing themselves of high school diplomas and teachers' certificates of good grade. The waiving of entrance examinations upon such proofs of scholarship and maturity is a recent offer of the College to the high school graduates and teachers of the State, but it seems to have been a timely and acceptable offer, and the results, so far, are very satisfactory. The 228 students named above are distributed at present among the several departments of the College as follows:

Geology—President	102
Chemistry—Prof. Norton	80
Modern Languages—Prof. Millikin; assisted by Miss Williams	154
Agriculture and Botany—Prof. Townshend	41
Mathematics and Civil Engineering—Prof. McFarland, assisted by student	133
Zoölogy—Prof. Tuttle	30
Military Science, Mathematics and Elocution—Prof. Lomia	45
Physics and Mechanics—Prof. Robinson	21
Latin and Greek—Prof. Smith; assisted by student	105
Mining and and Metallurgy—Prof. Lord	5
History and Philosophy—Prof. Short	20
Drawing—Free-hand and Mechanical—Prof. Mason	55

The disparity in the class lists of the several professors arises partly from the fact that the large classes in the preparatory department are not reached by all in the first term of the year. The work of the year, as shown on a preceding page, is a better measure, but even this last year had abnormal elements in it, owing to recent changes in the curriculum.

There are sixty-one counties of the State represented in our present catalogue.

The growth of the College is shown in part by the number of students present in it at the date of my several annual reports. It was opened for the reception of students in September, 1873.

In November,	1873,	there were	27	students, from	10	counties.
"	1874,	"	59	"	22	"
"	1875,	"	99	"	39	"
"	1876,	"	120	"	42	"
"	1877,	"	211	"	50	"
"	1878,	"	198	"	52	"
"	1879,	"	195	"	56	"
"	1880,	"	235	"	61	"

The statement was just made that the growth of the College could be seen in part by the tables that have been given, but it is to be distinctly borne in mind that the success of an institution like this is not to be measured only or chiefly by the number of students in attendance. The real and proper standard is the kind and amount of training that it gives to those who complete its courses of study, and who thus make full and fair proof of the work done in its several departments.

There was a large increase of students in 1877, but this increase was purchased in part by an unwise lowering of the standard of admission for that year, and the College was by no means strengthened in proportion to the increase. For all legitimate college purposes, the institution was much stronger in the two years succeeding 1877. The increase of the present year is not open, however, to any such criticism. The large body of students that entered the University in September last, is, on the whole, much better prepared for college work than the entering class of any former year. I assure you that we thoroughly appreciate the desirability on every account of having our halls well filled with properly prepared students, and we do not spare pains in seeking to attract such students to us, but to gather here a body of young people that are obviously and confessedly unprepared for college work of any grade, seems to us in all ways inexpedient and unwise. There has never been a year in our history in which we could not have gained a large increase in

numbers by simply dropping all entrance examinations and abolishing all standards of scholarship, but to do this, would, in our judgment, be a gross abuse of our foundation and a crime against education.

The past year has been a fairly successful one in every department of our college work. Good progress has been made in recitation-room and laboratory, as will be seen by the professorial reports. The changes announced in my last report, in the courses of instruction that lead to the degrees of the University, have been consummated, and they are already bearing good fruit. Our classes are stronger, and our students are held to better work. We have experienced a certain amount of confusion in effecting the change, as a matter of course, but this is already disappearing, and another year will find a much more effective organization of college work than we have attained hitherto.

The college order leaves little to be desired. Our students seem to recognize and to accept the responsibility which their large liberty entails, and in their relations to the faculty, to each other, and to the community, they have borne themselves honorably and well. It cannot happen, of course, that professor and pupil will see all questions pertaining to college life from the same point of view, but we have been happily spared, so far, those unfortunate collisions between faculty and students that, whenever they occur, interrupt college work and embitter college life.

The two dormitories are in good condition. Both are full, occupied by students who are glad to avail themselves of this means of reducing their expenses, and who cheerfully recognize the obligation that such use imposes to preserve the property and guard the good name of the college by the order to which they hold themselves. This self-imposed maintenance of order makes the dormitories a source of strength and credit to the institution.

The Literary Societies of the college are prosperous and effective in a high degree. The discipline that they impart is a valuable element in the student's education. Both societies have approved their loyalty and zeal during the last year by beautifying and refurnishing their rooms at large expense. I am glad that the Board of Trustees found it possible to express its interest and approbation by a donation to each society.

The Mechanical Laboratory has been completed and equipped during the year covered by the present report. It makes a signal addition to our educational facilities, and promises to be widely appreciated. A goodly number of young men are already pursuing the studies that lead to the degree of Mechanical Engineer. Some of them have been at-

tracted from other States by the advantages which we are now able to offer.

The Mining Laboratory has been kept busy with the chemical work that the State laws impose upon it. A large number of analyses has been made, and many questions have thus been answered as to the practical values of Ohio minerals. It is greatly to be regretted that much of this valuable labor is lost through the lack of any system by which the results can be extended to more than the individual specimen analyzed. This ground of complaint applies especially to the bungling and inoperative law in regard to the analysis of artificial fertilizers, which still holds its place among our statutes. If the agricultural interest needs protection in this respect, it will be easy to secure it by appropriate legislation, but the present law holds out a promise of protection that it does not keep.

I speak of these two laboratories in particular, because they are the two departments of the institution that have been established and equipped by State aid.

Few changes are to be noted in the organization of the faculty during the present year, but one change of great moment I take special pleasure in recording. The Trustees have invited Prof T. C. Mendenhall to resume his connection with the institution, and Prof. Mendenhall has promised to do so at the opening of the next college-year. He will return as Professor of Physics, the subject of Mechanics having grown, through the newly-equipped Mechanical Laboratory, into the full proportions of a department, which is to remain in the competent hands of Professor Robinson. The return of Professor Mendenhall will, beyond question, be a source of great strength to the institution.

Mr. Thomas Mathew, who had served the college with great fidelity for six years in the capacity of Instructor in Free-Hand and Mechanical Drawing, retired at the close of the last academic year. He takes with him the thorough respect and cordial good-will of the Faculty, with whom he has worked so loyally and faithfully. His place is filled by the appointment of Mr. W. A. Mason, a graduate of the Normal Art School of Boston. The statement of this fact is equivalent to saying that Mr. Mason has enjoyed the best advantages for learning the theory and practice of industrial art to be found in this country. He has made a successful beginning of his work.

By act of the Legislature at its last session, the Section in the organic law of the University, which forbade the making of Military Drill compulsory, was repealed. At its June meeting, the Board took action

upon the subject, making drill compulsory upon the male students of the institution, with the exception of the regular members of the Senior and Junior classes, and such other students as should be excused by the President on reasonable grounds. I have excused about 30 students, the grounds of excuse counted reasonable being certificates of physical disability from physicians, conscientious scruples on the part of parents, and in some cases, want of means to provide the uniform. An efficient system of military drill is provided for the remainder of the young men of the institution.

The second course of popular lectures on Agriculture was given in January last. It occupied three weeks, and was fairly successful in all respects. The attendance, however, was but little increased above that of the previous year. It is believed that the state of the roads in Central Ohio at this time prevented many farmers from coming in to the lectures, who would otherwise have done so.

A third course has been arranged to occupy ten days in January next. More cordial testimony, as to the interest and practical value of the lectures, cannot be asked, than has been given by the intelligent farmers that have composed the classes thus far, but the number in attendance ought certainly to be largely increased.

A system of county institutes for farmers, lasting for two or three days, has been recently established under the direction of the State Board of Agriculture. To the sessions of these institutes, Professor Townshend can render invaluable assistance, if provision can be made by which he can occasionally be released from college duties, to take part in this outside instruction. His special qualifications for such a line of work are universally recognized, and I believe that the college can serve the agricultural interest of the State and itself at the same time, by giving him as much freedom as possible in this respect. I hope that definite provision will be made for this service.

I am glad to note the growing interest of the farmers of the State in this institution, and I sincerely regret that any representatives of this great industry, see occasion for continued criticism upon the organization and management of the University. The work that has been done here so far, has been done in good faith and with a sincere desire to comply with the letter and the spirit of the Land Grant of 1862, upon which the college is founded. Each of the Land Grant colleges is obliged to construe for itself the terms of the organic law. There are, it is true, many self-constituted interpreters of the act, who can settle beyond all question its scope and aim, but unfortunately they do not agree with each other, and the questions still remain open ones.

There are two types of institutions founded on the Land Grant, represented on the one side by Cornell University of New York, and the Illinois Industrial University, and on the other, most honorably represented by the Michigan Agricultural College. The former class count agriculture *one* of the great industrial interests of society which they are specially set to serve; the latter practically counts it the *only* one. There are honest differences of opinion as to which carries out best the letter and spirit of the law on which both classes of institutions are founded. I will not go over the argument which has been worn threadbare already, but I will repeat the opinion, that I have often had occasion to express, that the first-named institutions are furnishing the kind and scope of education that the Land Grant contemplated. No second-rate or insignificant place is given to agriculture in these institutions, but each has, in addition to a farm manager, a professor of Agriculture, a professor of Botany and Horticulture, a professor of Veterinary Science, and the first, at least, has a professor of Agricultural Chemisty. According to the testimony of our leading agricultural paper, the most valuable series of agricultural experiments yet made in this country, has recently been contributed by Cornell University.

The difference between these institutions and our own, lies in the fact, that generous appropriations from the State and munificent gifts from individuals have enabled them to make the expansion named above in these practical directions, while our own institution, in default of such aid, has been obliged to limit itself to the common foundations of a liberal and practical education for the industrial classes, which shall fit them for the various pursuits and professions of life.

I am decidedly of the opinion that it is the duty and policy of this institution to expand as rapidly as possible the agricultural side of the University. If the Board agrees with me in this view, its task will be to devise ways and means for this extension.

I hope that the Board will see its way to an appointment that was foreshadowed at the September meeting, of an assistant professor in Botany and Horticulture. I should look for a young man who has the practical side of the department well in hand, and who could superintend that part of the farm-work that comes under this head. The addition of an assistant professor in Agricultural Chemistry would bring up this department to the full measure of reasonable demands. And further, if there should be established a lectureship on Entomology, I believe that the institution would be able to meet fully and fairly the peculiar claims of agriculture, and I believe that all this

could be accomplished without sacrificing the breadth and balance that has always been insisted on and maintained in the institution.

A subject in which the University is interested to some extent, was brought up in the Legislature near the end of the last session. A preliminary enquiry was proposed as to the possibility, the desirability and the practicability of effecting a union of the three institutions that are known as State Universities. Inasmuch as this institution is the strongest of the three, and has already a vigorous and growing life, it might be supposed that the enquiry originated in our ambition and our interest, but this was not the fact. I am not at all sanguine that any union is practicable, but there are many that believe that the interests of all the institutions and of public education in Ohio as well, would be promoted by such consolidation. An honorable perpetuity might thus be ensured to institutions that have served the State worthily in the past, but which now seem ready to perish. I think that we owe it to ourselves, however, to declare that we have no private schemes for conquest or absorption.

The wants of the University make a chapter by themselves. Every department seeks for assistance and expansion. I will name but few points at this time.

Of large items, I will specify but one. We need a separate building for a chemical laboratory. The part of the main building that we use for this purpose now, is over-crowded, badly ventilated, and in every way ill-adapted to the use. A new building need not be an expensive one, but provision should be made in it for General Chemistry, for Agricultural Chemistry, and for the Mining Department. All the available space for these purposes in the present building has been used, and every foot of it is already occupied, so that there is no proper room for the natural growth and expansion of these departments. Of course, we must look to the State for any such addition to our resources as this, but to the State, in this year of prosperity, all that we ask would be an inappreciable burden.

The buildings are in need of considerable outlay during the coming year. I trust that the Legislature will make provision for these ordinary repairs.

The Mining Laboratory, which is constantly engaged in gratuitous services for the people of the State ought not to look in vain to the Legislature for the means to carry on its work.

I earnestly hope that the Board will be able to grant to the Department of Physics a large enough sum to secure the apparatus which is specified in the accompanying letter of Professor Mendenhall. It is true

that the department was exceptionally well equipped at the opening of the institution, but it has received nothing of account for the last five years, and furthermore, I submit that every dollar spent in this department has been a most profitable investment for the institution. The good name that we enjoy in the State to-day is inseparably connected with the brilliant and effective and practical use of the apparatus of the Physical Laboratory, in the hands of Professor Mendenhall. It is sometimes urged that we are in danger of devoting too much attention to abstract and pure science, and not enough to practical application, but this danger never existed in this laboratory. It always abounded in most interesting and important applications to the interests of every-day life—and we have a right to expect that it will always hold this character while under the same control.

Professor Tuttle's request for physiological apparatus comes again before you with my cordial endorsement. The ground of his application is clearly set forth in his report, and I have a supplementary letter from him stating more fully the urgent need of his department for immediate help.

The requests from the Chemical Department and from the Department of Latin and Greek for books of reference, are moderate and reasonable demands, and I hope that something may be done in this direction at this time.

The additional equipment required for the Department of Drawing is inexpensive, but much needed. I trust that a small appropriation can be made for this purpose.

Very respectfully yours,

EDWARD ORTON.

Ohio State University, November 18, 1880.

DEPARTMENT REPORTS.

CHEMISTRY.

Edward Orton, Ph.D., President Ohio State University:

DEAR SIR: I have the honor to present this, my eighth annual report of the Chemical Department.

The class in Inorganic Chemistry, reciting the fall term of last year, numbered sixty-five. The class in Organic Chemistry during the winter term numbered forty-six. The number of students in the laboratory averaged nearly thirty for each term; the total number was thirty-four.

The class in Inorganic Chemistry this present term has an enrollment of fifty-two. There are now in the Laboratory twenty-eight students. The methods used in teaching the Science of Chemistry are the same as those described in my former reports. They seem well adapted to the needs of our students, and I see no reason for making any radical change. Nevertheless, I can not but feel that the slight changes which have been made from time to time, are improvements, and that the work is growing every year into a better defined system. In the Laboratory, especially, the necessary routine has become already a matter of course, and the succeeding generations of students aid one another in the manipulations, and the little contrivances for facilitating work.

Our facilities for instruction in the kind of work that we are undertaking are ample. The class demonstrations are for the most part of the sort that any intelligent student can hope to repeat for himself. I have never thought fit to advise the purchase of expensive and complicated apparatus; but I think that the time has now come when some of additional contrivances would be found useful. The most necessary one, which would come into frequent use, is a large dipping battery, sufficiently strong for the electrolysis of potassium chloride. I had expectations of utilizing the batteries of the Physical Laboratory, but, unfortunately, classes do not recite in the same term, and for this reason the chemical lecture-room should have a battery of its own. Other appliances should be added from time to time, like the now famous Hofmann's lecture-table apparatus; machines for condensing carbonic anhydride &c. I do not desire to buy a large list of these at any one time—but should be glad to add something of the sort every year. If $50 yearly were devoted to this purpose, we should at no distant day have a suite of apparatus of which we could be proud.

In spite of all attempts to improve it, the ventilation of the Laboratory is very bad. A separate building for the Chemical Department has long been recognized as

a great desideratum. Our present rooms are ill-adapted for a laboratory, and will soon become too small for the needs of the University. I therefore desire earnestly that an effort be made in this direction, and hope, when the building is constructed, that special pains will be taken with the ventilation. No one who has not worked in a room, with a choice only between foul air and unhealthy draughts, can realize how important is this consideration.

If a new laboratory is built, special reference should be had to convenience in analytical work. With very little foresight, the arrangements can be such as to give all necessary facilities at a very moderate cost. If we are to continue in our present rooms, there is need of thorough repair in our poison-hood, and also for additional conveniences in many directions.

I regret always, and at all times, that so few of our students find opportunity to pursue an extended course in chemistry. Two and one-half hours' work, daily, for two years, is not sufficient time for attaining anything like a mastery of analytical chemistry. But so busy are some of our students, that even this is shortened by one cause or another. Some of our last year's graduates accomplished more than should be expected of them, but others did merely the scantiest schedule-work possible. In view of these facts, which apply also to other departments, I would suggest that notice be made, on graduation, of the degree of excellence attained by the student. I am certainly mortified at being compelled to accept the present minimum of attainment for passing in chemistry.

I enclose with this a list of books which ought to be purchased, for the use of our students in chemistry. At present, the chemical library of the University consists of Watts' Dictionary, a valuable work, but not fully supplying our needs. There ought to be in the University Library enough text-books to answer the inquiries of the earnest student in general chemistry. The advanced student should have access to the best journals. We have just begun to take one journal. We need all of the principal and past volumes for thirty years back, besides all of the special monographs relating to analytical chemistry.

Mr. David O'Brine has been a faithful assistant in chemistry during the year. He has had full charge of the laboratory accounts, and of many other details in the laboratory. Other students have helped, as occasion required, gratuitously and zealously.

The past year has been, in many respects, the most successful one in the history of the department. The present year begins with even a better promise, although our numbers are less.

Respectfully submitted. SIDNEY A. NORTON, *Professor of Chemistry.*

November 1, 1880.

ENGLISH AND MODERN LANGUAGES.

OHIO STATE UNIVERSITY, *November*, 1880.

President Edward Orton, Ph.D.:

DEAR SIR: I have the honor to submit the following annual report upon the Department of English and Modern Languages and Literature:

The students in the various classes of the Department during the college year 1879–80 were—

	1st term.	2d term.	3d term.
1st year, English	16	14	17
2d " "	17	16	16
1st " German	30	22	21
2d " "	10	9	11
1st " French	9	8	9
2d " "	6	6	6

In the classes of the present term there are—

Junior English	13
Senior English	17
1st Prepar. German	56
2d Prepar. German	19
Freshman French	42
Sophomore French	7

The classes in the above tables are the same—the names in the second table indicating their place in our newly revised college course. It is not to be understood that the total of the rolls for any given term indicates that just so many different students are in the department. Many pursue two, and quite a number pursue even three, of the studies of the department, thus doing the most or the whole of their college work in the Rhetoric, Logic, Languages or Literature that are committed to me.

In addition to these six daily classes taught by Miss Williams and myself, I have charge of the weekly rhetorical exercises of the College classes. These consist of original speeches and essays. Giving help in their preparation in the way of references, etc., revising them when handed in, and criticism of them when read or delivered, is the full equivalent of a daily recitation. I am glad to believe in a growth of interest in these exercises, and a growing use of good reading as a help thereto. I am grateful to the Board for my share of the appropriation for books, and shall expend it with equal care and pleasure.

The department is in good condition and efficient working, and everything promises well for the college year, so far as I have reason to know.

I am, with great respect, yours,

JOSEPH MILLIKIN,

Professor of English, and Modern Languages and Literature.

AGRICULTURE, VETERINARY SCIENCE AND BOTANY.

OHIO STATE UNIVERSITY, *November* 1, 1880.

President Orton:

DEAR SIR: The eighth annual report of the Department of Agriculture, including Veterinary Science and Botany, is respectfully submitted. During that part of the past college year not included in the last report, the classes in Agriculture and Veterinary

Science numbered eleven. The present year shows a gratifying increase, both classes having doubled.

The class in Structural and Systematic Botany, during the third term of last year, and not heretofore reported, numbered fifty. The class in Economic Botany, which for the past year consisted of five students, at present numbers nineteen.

The veterinary models ordered from Paris some months since, have not yet arrived. The stable recently built in the rear of the University has not been occupied, as was intended, for a free veterinary clinic, in consequence of the prevalence of epizootic influenza among the horses of this region.

Various experiments under my direction were conducted during the past year upon the University Farm, by Mr. Thorne, whose report to me in detail is herewith included. A series of experiments under my direction has been conducted during the year with wheat and corn, with potatoes, sugar beets, sorghum, and with grasses, clovers and other forage crops, the design being to determine the relative value of different varieties, and the effect of different methods of culture and the action of various fertilizers, and also the effect of thorough drainage.

At the second course of Lectures to Farmers by the Professors at the University in the month of January last, the attendance was larger than at the lectures of the previous year, and the interest was such as to demand a similar course next January. Portions of the State which heretofore have been represented only at these lectures, have this year sent students to the University.

Yours, truly,

N. S. TOWNSHEND.

DEPARTMENT OF MATHEMATICS AND CIVIL ENGINEERING.

OHIO STATE UNIVERSITY, COLUMBUS, OHIO, *November* 1, 1880.

Edward Orton, President:

DEAR SIR: I have the honor to make the following report touching the work done in this department, for the year closing October 31, 1880. The number of students in the several subjects taught is given in detail, by sessions:

Fall term, 1879—1st year, Engineering, 19; 2d year, 12; Algebra, 50.

Winter term, 1880—Algebra, 45; Geometry, 39; Descriptive Geometry, 15; 2d year, Engineering, 10.

Spring term, 1880—Geometry, 25; Trigonometry, 36; 2d year, Engineering, 10; Geodesy, 1; Astronomy, 21.

Fall term, 1880—2d year, Engineering, 6; Surveying, 19; Geometry, 24; Algebra, 84.

The work, in all the studies, has been, in general, satisfactory.

Field-work, for the classes in engineering, is carried on in the fall and spring terms, every day when the weather permits. It consists in the usual work of leveling, measuring heights and distances, surveying various tracts of land in various ways,

setting out curves, and executing all the preliminary work in railroad surveys, as commonly done in actual practice.

In the winter session, when field-work is ordinarily impracticable, these classes are instructed in all the parts of drawing pertaining to engineers' work, viz.: platting, isometric, axonometric, and topographic work, shades and shadows, and the general principles of perspective.

I am glad to say that the generous action of the Board of Trustees makes it possible for me to announce that before the close of the current year, the College will be furnished with a telescope from the house of Alvan Clark & Sons.

Very respectfully, R. W. McFarland.

ZOOLOGY AND COMPARATIVE ANATOMY.

Ohio State University, Columbus, Ohio, *November* 1, 1880.

Edward Orton, Ph.D., President:

Dear Sir: I have the honor to submit the following report:

During the collegiate year, which terminated on the 23d of June last, the number of students in the various classes under my charge was as follows:

Elementary-Physiology	52
Elementary Zoology	41
Vertebrate Anatomy	9
Advanced Zoology	3
Advanced Physiology	8
Total class-enumeration	113

Deducting 32 who were enrolled in more than one class, the number of students who have entered classes in this department during the year recently closed, is 81.

The enrollment for the current term is as follows: Elementary-Physiology, 24; Comparative Anatomy, 1; Advanced Physiology, 5.

The changes in the courses of study recently adopted by the faculty, will, necessarily, operate to make the classes in my department much smaller during the current year, and the year following, than during the last and those immediately preceding it. In view of this fact, I have consented to take temporary charge of the weekly exercise in English of the First Preparatory class, the enrollment of which is 55.

No changes in the text-books used, or the methods of instruction employed, have been made during the collegiate year. No additions of importance have been made to the equipment of the department since my last report.

In view of its direct practical value, I would again respectfully urge the importance of due provision for the efficient teaching of Physiology to advanced students. Physiology alone, of all the branches of Natural Science now taught in the University, is at present studied almost entirely from books, whereas, suitable apparatus is

as much of a necessity for its proper study as for that of physics in chemistry. Advanced students of this important science, looking forward to the practice of medicine, either human or veterinary, ought to derive as large a share as possible of their knowledge directly from nature, instead of receiving it at second-hand, as at present. The value of such direct practical knowledge, not only to those who expect to have the lives of their fellow-men entrusted to their keeping, but also to those who have to do with the breeding and care of our domestic animals, would far more than repay the necessary outlay.

I must also urge the immediate need of new skeletons of the domestic animal and of man. Those now in our possession have yielded so much to the effects of years of constant use that they are no longer a credit to the University.

An appropriation of one thousand dollars for the first of these wants, and of three hundred for the second, would be more than repaid in the efficiency of the department.

I would also respectfully suggest to the Trustees of the University the desirability of securing legislation, looking to the performance of the duty enjoined by the organic law of the University of making a complete collection of the noxious and beneficial animals of the State. I need hardly refer to the value of such a collection.

All of which is respectfully submitted.

ALBERT H. TUTTLE,
Professor of Zoölogy and Comparative Anatomy.

MILITARY SCIENCE AND TACTICS.

OHIO STATE UNIVERSITY, *November* 1, 1880.

Edward Orton, Ph.D., President Ohio State University:

SIR: I have the honor to make my fifth annual report to you of the departments under my charge.

I. MILITARY SCIENCE AND TACTICS.

With the restoration of the compulsory feature to the drill, things, I am happy to say, fare much better in the military department.

I have in my charge one hundred and forty-four (144) young men undergoing military instruction. This number includes the cadet band, and also two members of the Senior class, who, though excused by the action of the Board of Trustees, yet prefer to drill. Seniors and Juniors being exempt by trustee action, all other male students are now regularly in drill, except those who have been excused by you—thirty in number—up to date.

For administrative purposes the cadet battalion is divided up into two permanent companies, but for battalion maneuvres it will be formed into four or more smaller companies. It would be gratifying to me if a place could be found in the annual report, in which to publish the names of the commissioned and non-

commissioned staff, as also of the company, officers and sergeants. These young men earn their distinction through much labor and commendable zeal, and should therefore be entitled to this notice.

The officers in charge of the military department at colleges are now ordered by the President of the United States—through the Secretary of War—to make quarterly reports to the Adjutant-General of the Army, concerning the number and discipline of their respective cadet organizations; and also in each case, as regards the progress made in the department, and the interest manifested by the Faculty in military drill. This seems to me a very good thing; it brings these military organizations in closer relation with the General Government, and I have no doubt may result beneficially in this, that, through recommendations made to the Adjutant-General, worthy cadets aspiring to positions in the regular army may obtain the same. But as colleges now applying for the detail of army officers greatly exceed in number the details allowed by law, the United States Government—it has been plainly hinted—may at any time withdraw the services of an officer from a college, where there may be a lack of co-operation with the military department on the part of the college authorities.

In our University the military discipline is thorough and exacting, though never unreasonable. Reports are given for breaches of discipline, which, if not removed, count as *one* or *two* demerits, according to the nature of the offense. Ample opportunity, however, is given to every cadet to explain any reports he may receive; and in this respect the department is, perhaps, more lenient than it should be, as the student is but too often given the benefit of a doubt. Unexplained reports, or for which unsatisfactory explanations have been offered, are reported in writing to you without delay. As a guard against errors, full lists of reports, for which *one* or *two* demerits are given, have been made out by me, and are kept in the Adjutant's office for reference. Exact copies of these lists have been duly handed to you. Should a report be worded in such a way as not to be found in those lists, then such, I have ordered, shall count as one demerit only, thus giving the benefit, if any, to the student.

In the theoretical course I have this year twenty-four (24) pupils, twenty (20) of these taking up the study of Tactics and Regulations, while four (4) are in the advance Military Science class. Practical and theoretical instruction is being given as in previous years, and in accordance with methods stated in former reports.

As there is found to be no site on the University grounds on which a target might be placed with safety, I hope that a target-screen may yet be erected, so that we may reap the benefit of what is now considered an essential part of a soldier's training. From the liberal supply of ball cartridges furnished us by the War Department every year, it might be inferred that we are expected to use them.

The Cadet Band is doing finely under the competent leadership of Sergeant Makepeace. I hope that the Board will furnish its members with white belts and pouches for music, of which they stand very much in need. The Cadets, tired of the red stripe, and of the red about their uniforms generally, have secured a change. The new uniform is neat and tasteful, but hardly sufficiently *prononcé* for a military uniform; yet, as it meets with their general approval, I heartily congratulate them on having obtained what they wanted.

A drill-hall is of the utmost importance to the success of the drill, and should be provided, with as little delay as possible, as much valuable time is lost in unfavorable weather. Neither the college-halls nor the basement meeting this pressing want, I urgently recommend this matter to the Board of Trustees.

I transmit herewith a list of the Cadet Officers and Sergeants:

1. *Staff*—

   Edward Hyatt, Adjutant.
   E. O. Ackerman, Acting Q. M.
   George D. Makepeace, Band Leader.
   Horace Allen, Sergeant Major.
   F. M. Allen, Quartermaster Sergeant.

2. *A Company*—

   H. R. Pool, Captain.
   Paul Cooke, Lieutenant.
   J. T. Anderson, 1st Sergeant.
   W. A. Ely, 2d Sergeant.
   P. C. Robinson, 3d Sergeant.
   J. H. Galbraith, 4th Sergeant.

3. *B Company*—

   Edward Hyatt, Captain.
   M. N. Mix, } Lieutenants.
   E. O. Ackerman, }
   Chas. J. Howard, 1st Sergeant.
   D. A. Fisher, 2d Sergeant.
   F. Shedd, 3d Sergeant.
   J. R. Lovejoy, 4th Sergeant.

II. MATHEMATICS.

In this department I have Analytical Geometry and the Calculus (Differential and Integral). This year's class numbers thirteen (13) members. They will go through these studies by the end of the present academic year. Loomis' revised editions are used as text-books, but full recourse is had, when necessary, to such mathematical authorities as Hadden, Haven, Woolhouse, De Morgan, Gregory and Church. The frequent examinations that I have had so far during the term attest that the class, generally, is doing well.

III. ELOCUTION.

In this I have eight (8) students at present, mostly of the higher classes. They receive individual instruction in declamation, and, when they desire it, also in reading. As I have already stated in former reports, I will again respectfully suggest that, were the Trustees to offer a prize or two to the best declaimers, such an impetus would be given to this branch of instruction as to cause, without any doubt, most excellent results.

I am, sir, very respectfully,
Your obedient servant,
LUIGI LOMIA.

1st Lieut. U. S. 5th Art'y, Prof. Military Science and Tactics, and Adjunct Prof. Mathematics.

PHYSICS AND MECHANICS.

OHIO STATE UNIVERSITY, *November* 16, 1880.

Edward Orton, Ph.D., President:

DEAR SIR: I submit the following report upon the Departments of Physics and of Mechanical Engineering.

PHYSICS.

Winter Term, 1880.

Elementary Physics—students	40
Advanced, or Laboratory Physics—students	10

Spring Term.

Advanced, or Laboratory Physics—students	10

Fall Term.

Advanced, or Laboratory Physics—students	5

MECHANICS.

Winter Term, 1880.

Machinery and mill-work—students	3
Machine, designing and drawing	3
Mechanical Laboratory	9

Spring Term.

Prime movers	3
Advanced, or machine designing, drawing	3
Mechanism	2
Mechanical Laboratory	6

Fall Term, 1880.

Analytical mechanics	6
Mechanism	1
Thermodynamics	1
Mechanical Laboratory	13

Aggregate for 1880.

Class attendance in Physics	65
Class attendance in Mechanical Engineering	50

The occupation of the new Mechanical Building, by classes, began last January. Most of the machines and appliances were on hand at that time, with the exception of the steam engine, the latter being delayed nearly two months at the factory. The

machines, though among the best made, were not available for class work till after the adaptation of accessories, such as tools, drills, cutters, centers, chucks, etc. A considerable portion of the time of the students in practice was put upon this during the winter and spring terms. It was not, therefore, till this fall that we commenced Mechanical Laboratory practice on the plan contemplated, and as detailed in previous reports.

Though the machines have all been used and found efficient, they have only been so employed in a limited way. That is, the quantity of accessories is yet very limited, so that some of the machines have not been used in all the arrangements possible, or to the full capacity of illustration. It is intended to complete this during the present year, as the classes advance to require it.

The cases and desks, for which appropriations were made last June, have been completed, and are in use. Specimens which have been promised, will make a good beginning of a collection, for the room provided for them.

Very respectfully yours,

S. W. Robinson.

LATIN AND GREEK.

Ohio State University, Columbus, Ohio, *November* 1, 1880.

Edward Orton, Ph.D., President:

Dear Sir: My fifth annual report for the department of Latin and Greek is herewith respectfully submitted:

I have, as heretofore, four daily recitations—two in Latin, and two in Greek. At the beginning of the present term over a hundred students were enrolled in this department, showing a handsome increase over last year, and furnishing ample evidence that the ancient languages are holding their own so far as the popular demand is concerned. The largest percentage of increase is naturally in the preparatory classes, and this leads me to call attention again to the urgent necessity of making permanent provision for the accommodation and instruction of these classes. They are at present in charge of a student assistant, Mr. Lewis, who is doing as good work with them, hampered as he is by his own studies, as could reasonably be expected. There are about fifty members in the present first preparatory class in Latin, against thirty last year, and it is only fair to expect a like increase next autumn; which will necessitate a division of the class, and render additional teaching-force indispensable. This important question is pressed upon the consideration of the Trustees. The preparatory department has abundantly proved its own usefulness, and ought to be vigorously sustained.

With the other needs of the department, set forth in previous reports, yourself and the Trustees are familiar. A small sum, to be placed at my disposal for the purchase of books and charts from time to time, would best meet my desires in this re-

gard. The general progress of the students in my classes has been, on the whole, very satisfactory.

The following figures show, 1st, the number of students in the department during the last college year (1879–80); and, 2d, the number enrolled during the present year:

	Last year.	This term.
Sophomore Latin	8	7
Freshman Latin	13	12
2d preparatory Latin	17	16
1st " "	36	54
Total	74	89
Junior Greek	...	5
Sophomore Greek	5	4
Freshman Greek	8	7
Total	13	16
Grand total	87	105

Deducting 14 from the first of these totals, and 13 from the second, for students taking both studies, the number of *different* students in this department will be respectively 73 and 92.

Yours, respectfully,

J. R. SMITH,
Assistant Professor.

DEPARTMENT OF MINING AND METALLURGY.

OHIO STATE UNIVERSITY, *November* 1, 1880.

President Edward Orton, Ph.D.:

DEAR SIR: I have the honor to present the following report on the work of the Mining Department for the past year. During the winter and spring terms there were nine students in the classes of Mining, Metallurgy, and Assaying, and a special student taking a short course preparatory to entering a mining business.

The class in Mineralogy numbered twenty-one; this is the only class in this department which forms part of the regular college course for all the scientific degrees, and hence is necessarily larger than the purely technical classes.

The present fall term opens with five students in Metallurgy and Assaying, owing to the change adopted in the courses last year. There would have been no regular class in Metallurgy this fall. This study having been thrown forward a term, so that for this fall there is a break of one term; taking advantage of this, I was able to give the hour to a special class and thus enable some students to finish their work, who would have otherwise been, by the same change, compelled to leave it incomplete. In future, however, the classes will come on regularly.

The State Laboratory has been crowded with work, which has received as much time and attention as could be given it without neglecting the class instruction. There have been one hundred and fourteen analyses and assays finished and reported during the year, mostly of iron ores, limestones, coals, and fertilizers.

This work would be of more value, if the manner in which the samples were taken could be more definitely controlled by the department, so as to secure for analysis a specimen representing an average.

A step is being taken in this direction now by requiring from all parties sending ores, a full statement of the character and location of the deposit whence the sample is taken, so that it is hoped that this analysis made during the coming year may give more information of permanent value. The value of the analyses made in this Laboratory is certainly one thousand or twelve hundred dollars a year, and this should give valuable public information, instead of going, as is too often now the case, merely to benefit some individual's private business.

The Laboratory needs, most imperatively, about two hundred dollars for additional equipment in acid chambers for carrying off corrosive vapors, and a special appropriation for this purpose is earnestly asked, as the health of those employed in it is concerned in its more perfect protection from such poisons.

Very respectfully, NAT. W. LORD,

Assistant Professor of Mining.

HISTORY AND PHILOSOPHY.

OHIO STATE UNIVERSITY, COLUMBUS, *November* 15, 1880.

President Edward Orton, Ph. D.:

DEAR SIR: This, my second annual report, is a brief exhibit of the workings of the department committed to me, during the first year of its existence, as well as being a statement of its present status. That it has met a want and been appreciated is manifest by reference to my class-rolls for the year, where it appears that a large number of our students have availed themselves of its advantages.

The following is a tabulated statement of the numbers in the several classes in the department for the college year of 1879–1880:

First Term.

Advanced History (Middle Ages)	10	
Philosophy	5	
Elementary English	36	
Total		51

Second Term.

Advanced History (Modern Europe)	10	
Philosophy	5	
Elementary U. S. History	47	
Total		62

Third Term.

Advanced History (U. S. Constitution)	10	
Philosophy	3	
Elementary U. S. History, second class	22	
Total		35
Total for year		148
Twice counted		44
Net total for year		104

If to this be added the class of forty-five in General History, taught by yourself, we shall have a total of one hundred and forty-nine—the number of students availing themselves of the advantages of the department in one year.

The present term marks an increase in the number of advanced students in History and Philosophy; the classes in these subjects now being 14 and 6 respectively. I have in addition, a class of eighty in Abbott's "How to Write Clearly"—a weekly recitation—to continue throughout the year. Two classes in Elementary United States History were taught last year. The second of these was extra to the prescribed work, and was designed to afford facilities to students who felt themselves discommoded by the transition from the old to the new curriculum. The total number in these two classes was sixty-nine.

In the advanced History, particular attention is given to the growth of constitutions and the rise of representative government. The condition of the people, of the mechanic arts, of agriculture, of commerce, and the tendency of the historic forces which give character to civilization, receive special consideration.

In the first term, Hallam's "Middle Ages" is supplemented by a course of lectures on the English Constitution. On the completion of the text-book work in the second term, a course of lectures on the Present Condition of the Great Powers follows. In the third term, no text-book is used. The Constitutional History and Civil Polity of the United States, is taught exclusively by lectures and by reference, (1) to the original sources, such as Elliott's "Debates," the "Annals" and "Debates of Congress," etc., and (2) to such respectable constitutional Histories as those of Curtis, Benton and Von Holst. One recitation hour per week throughout the year, is devoted to the reading and criticism of Theses on historical questions—an exercise similar to that afforded in the *seminar* of German Universities.

The first term's work in Philosophy is devoted chiefly to the principles of "presentative" and "representative knowledge." Special attention is given to the problem of the relation of Mind and Brain, the subject being studied both historically

and with reference to the latest physiological investigation. The philosophy of reasoning and the study of the Emotions and Will are embraced in the second term's work; the latter subjects being taught in a six weeks' course of lectures. A lecture on the History of Philosophy is given each week. The third term is devoted to Ethics, both in the philosophical and practical aspects of the science.

The spirit of earnestness and fidelity displayed by my students, in the work of personal investigation and research, has proven a constant source of satisfaction to me, since I believe it witnesses to the value of that special training, which it is our aim to give in the advanced classes.

The grant of $125.00 (a part of the library fund) for the purchase of books relating to the work of the department, is gratefully acknowledged.

Respectfully submitted,

JOHN T. SHORT,

Assistant Professor of History and Philosophy.

MECHANICAL AND FREE-HAND DRAWING.

OHIO STATE UNIVERSITY, COLUMBUS, OHIO, *November* 1, 1880.

Edward Orton, Ph.D., President:

DEAR SIR: I have the honor to present my first report for the Department of Mechanical and Free-hand Drawing.

Having been connected with the University for so short a time, I cannot report so intelligently as I should desire concerning the state of my department. The term opened with about 40 students in my department, but the number has now increased to 55. My students are divided into two classes, one group constituting the Free-hand Drawing class, and the other, the class in Mechanical or Projection Drawing.

In the former class there are now 42 young men and ladies pursuing courses in Industrial and Artistic Drawing—drawing from the flat, in outline, or shaded; drawing from the round in various mediums, with the intention of extending the study to working in color. In the Projection Drawing class there are now 13 young men studying and practicing the elements of mechanical drawing as a preparation for the special drawing in their respective technical courses.

This latter study is completed in one term, whereas the Free-hand Drawing class holds for the whole year.

Having stated the nature of my classes, and the work which is being done, I shall be pleased to forecast what I hope will be the course to be pursued in the future in my department.

Drawing is rather an exceptional study, but although its principles are as exact and demonstrable as those of any other study, the practice of the act is limitless. With many of the sciences, arithmetic or geometry, the study is soon carried to an

end, but with drawing, the earlier it is begun and the oftener it is practiced, the greater the mastery of the hand and the discernment of the eye. Therefore, I should hope to see drawing introduced into either the first and second, or the second year of the Preparatory Course.

The amount of time being two hours per week; and the subject taught by class-lectures of one hour each. Great advantages are obtained by class-lectures in drawing, as in any other study; an amount of enthusiasm is kept up, the attention of all members of the class is better secured, and principles of form, perspective and color are much better and vastly more easily explained once before a class, than many times individually in the studies.

This earlier commencement of the study will undoubtedly develop latent talent, leading many perhaps to continue the study, who would not otherwise have taken it later in their college courses, owing to the press of other studies.

In the Freshman year the study should be taught as it is now—two hours per week, and in the same manner—by studio practice. The principles having been learned in the previous year by the class-lectures, and the elementary part of the practice acquired, the students will now be prepared to take up the studio work proper.

The studio has been stocked with a number of excellent plaster casts for drawing from, and a hundred or more drawing-copies in outline and shaded; and I feel certain, that were the studio better filled up—with screens for the casts to hang on, good facilities for work, and proper light, it would attract many more than at present pursue the study. The screens needed are four or five in number, with shelves for groups of models, and hooks for the casts to hang on. The department also requires a cabinet or case for the reception of copies, and separate spaces or lockers for each student's drawings and materials.

As regards Projection Drawing, it would seem wise to introduce it into the first term of the Sophomore year of the Civil Engineering Course. It will give these students the elementary training for the special engineering draughting, and will synchronize the study in all the technical courses.

One other suggestion I would like to make, and that is, that a good opportunity may now be offered to persons desirous of becoming teachers of drawing, or to those who desire to pursue special courses in Art. A great amount of time can be utilized that is not now used in its fullness, due to the irregularity of the students' hours. If the students, who now come in at various hours through the day, could by any harmonious means be brought together, a great deal of time could thus be saved, and may be devoted to the special students in Art. This would be fulfilling the demand of the times for designers, and for teachers of drawing in the public schools; in other words, an Art Training Department might be established. This is a suggestion to be considered with no little attention.

Very respectfully,

W. A. Mason, Jr.

CIRCULAR AND CATALOGUE.

FACULTY.

EDWARD ORTON, PH.D.,
President, and Professor of Geology.

SIDNEY A. NORTON, PH.D., M.D.,
Professor of General and Applied Chemistry.

JOSEPH MILLIKIN, A.M.,
Professor of English Language and Literature, and of the French and German Languages.

NORTON S. TOWNSHEND, M.D.,
Professor of Agriculture.

R. W. McFARLAND, A.M.,
Professor of Mathematics and Civil Engineering.

ALBERT H. TUTTLE, M.SC.,
Professor of Zoology and Comparative Anatomy.

LUIGI LOMIA, M.SC.,
First Lieut. Fifth Artillery, U. S. A.; Professor of Military Science and Tactics, and Adjunct Professor of Mathematics.

S. W. ROBINSON, C.E.,
Professor of Physics and Mechanics.

JOSIAH R. SMITH, A.M.,
Assistant Professor of the Latin and Greek Languages.

NAT. W. LORD, M.E.,
Assistant Professor of Mining and Metallurgy.

JOHN T. SHORT, PH.D.,
Assistant Professor of History and Philosophy.

WILLIAM A. MASON, JR.,
Assistant Professor of Drawing, Painting and Design.

ALICE WILLIAMS,
Assistant in Department of Modern Languages.

JOSIAH R. SMITH, A.M.,
Librarian.

MISS S. GLOVER,
Assistant Librarian.

STUDENT ASSISTANTS.

CHARLES M. LEWIS,
Assistant in Latin and Greek.

DAVID O'BRINE,
Assistant in Chemistry.

HORACE L. WILGUS,
Assistant in Mathematics.

CHAUNCEY B. BAKER,
Assistant in Zoology.

SIDNEY H. SHORT, B.S.,
FREDERICK KEFFER,
Assistants in Physics.

FREDERICK MARVIN,
Assistant in Mechanics.

ORGANIZATION AND EQUIPMENT.

The Ohio State University is founded on the Congressional land grant of July, 1862. By that act a large amount of the public land was turned over to the several States, the proceeds of the sales to be devoted to the better education of the industrial classes. The share of each State was proportioned to its representation in the National Legislature, and thus six hundred and thirty thousand acres came into the possession of Ohio. This munificent gift was unfortunately pressed for sale upon a temporarily overstocked market, and the State realized only fifty-four cents to the acre. The total amount of the sales ($342,450) was, however, put at interest, and when the institution was opened, in September, 1873, the principal and interest together constituted a productive fund of something over $500,000, which has since been increased to a small extent, until an annual income of $34,000.00 has been reached.

The Legislature having passed an act to authorize the several counties of the State to raise money to secure the location of the University, an offer of $300,000 from Franklin county was accepted by the Board of Trustees, and the University was permanently located at Columbus. The money furnished by Franklin county has been mainly expended in the three following items: 1. The purchase of a valuable farm of three hundred and thirty acres within the corporate limits of the city of Columbus. 2. The erection of a spacious and elegant college building and two dormitories for students. 3. The equipment of the various departments of instruction in the University.

The total value of endowment and property at the present time exceeds $1,000,000.

The departments already established, and the provisions made for giving instruction in them, are as follows:

I. PHYSICS.

For this subject ample provision has been made in the equipment of the institution. It is safe to say that, in the opportunities afforded for thorough study in it, the University already surpasses most of the institutions of the country. Its laboratory is supplied with expensive and well-selected apparatus, designed not only for illustration, but also for original research in all the leading divisions of the science. Students are directed to its use in the way of original investigation as soon as they are properly prepared to undertake such work.

II. CHEMISTRY.

The course in General Chemistry provides instruction in pure science, developing the theories and laws in order, and illustrating them by an extended suite of experiments. This course is supplemented by an important series of lectures on the applications of Chemistry to the Arts.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemistry, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy.

The course in Quantitative Chemistry includes both the volumetric and the gravimetric methods. The student will also be assisted in any special branch of the science that he may desire, and take up in detail topics which relate to pharmacy, medicine, agriculture, and other sciences in which the principles of Chemistry are applied.

III. ZOÖLOGY AND COMPARATIVE ANATOMY.

The subjects of Zoölogy and Comparative Anatomy constitute a distinct professorship, and means have been provided for making the instruction in this subject thorough, practical and extensive. A large amount of material, selected with special reference to its availability in teaching, has already been accumulated.

A dissecting-room, with good facilities for the study of veterinary anatomy, is also furnished, while for practical training in microscopy there have been supplied eight microscope stands, representing all the principal modes of construction, and nineteen objectives, giving powers up to 2,500 diameters.

A Physiological Laboratory has been established during the present college year, which is supplied with apparatus for the quantitative determination of several of the more important animal functions. It constitutes an important and timely addition to the means of instruction furnished by this department.

IV. BOTANY AND HORTICULTURE.

These subjects, comprising the scientific and practical sides of the study of the vegetable kingdom, have recently been combined in a separate department, and, at the opening of the Spring term, extended and thorough instruction in them will be begun.

V. GEOLOGY.

The University is able to present unusual advantages for the study of Geology. By act of the Legislature it has been put in possession of all the collections made by the late State Geological Survey, and these collections have been supplemented by valuable additions of fossils and minerals from various sources. The State collection embraces a very complete representation of every geological formation shown in Ohio.

VI. AGRICULTURE.

The department of Agriculture, which also includes the *diseases of animals* and their *medical and surgical treatment*, is provided for in a distinct professorship, the aim of which is to acquaint the student with the theory and practice of a truly rational system in this most important field. The course extends through two years, and is rendered practical by being constantly connected with the work that is carried on upon the farm. Numerous opportunities are afforded to the students in veterinary medicine of observing the treatment of diseased animals.

VII. MATHEMATICS.

Under the two professorships that divide the work of Mathematics between them a full course of instruction is provided for, including also the subject of Astronomy. A term is given to Trigonometry, and one and a half terms are given to each of the two subjects, Analytical Geometry and Calculus. The work of several other departments, especially Civil Engineering, Physics and Mechanics, and Chemistry require the constant and practical application of the knowledge acquired in mathematical study.

VIII. DRAWING AND DESIGN.

Instruction in these subjects is provided in the University, and all needful facilities are furnished by which those who wish may acquire skill in these several departments of art. Drawing is made a prominent element in the education of all students in engineering.

IX. CIVIL ENGINEERING.

This course, which extends through two years, includes surveying, location, and construction of roads and railroads, construction of bridges, strength of materials, geodesy, etc. The time of one professor is chiefly devoted to this department. Field-work is extensive and varied, for the execution of which a full set of engineering instruments of the finest construction is provided.

X. MINING ENGINEERING.

This department is now in successful operation, and classes are established in the several branches belonging to it. The mining of coal and the manufacture and working of iron are recognized as leading subjects in it, but full courses of instruction are offered in general metallurgy. The department is well equipped, both for instruction and practical work.

XI. MECHANICAL ENGINEERING.

The University is able to offer excellent advantages in this important subject. A mechanical laboratory has been established, and is in successful operation. The Russian system of hand-training has been introduced, which insures the imparting of a measure of practical skill, together with theoretical instruction.

XII. MILITARY SCIENCE AND TACTICS.

In accordance with an act of Congress, an officer of the United States army has been detailed by the War Department to give instruction in the subjects named above. An extended course of lectures and recitations in Military Science is offered to such students as desire it, while thorough training in military drill is made obligatory upon all male students, except such as are excused on reasonable grounds.

XIII. ENGLISH, FRENCH AND GERMAN LANGUAGES.

In the organization of the University, special prominence is given to the modern languages. Some of the students who resort here will study no language but their own, and it is, therefore, imperative that the opportunities for training in English

should be made ample, while all who expect to attain any good degree of proficiency in the natural sciences must certainly acquaint themselves with French and German.

The course of study in the English language and literature has been made especially complete—as full and thorough as any offered in the colleges of the country. Rhetorical training of all students in the regular courses is also included here.

French and German can be pursued in courses as extensive as the needs of the student may require.

XIV. LATIN AND GREEK LANGUAGES.

Ample provision is also made for the study of the Latin and Greek languages, not only in compliance with those terms of the organic law of the University which forbid the exclusion of classical studies, and which declare one of the aims of the institution thus endowed to be "the liberal education of the industrial classes," but also because of the great advantage which such study gives in acquiring a thorough knowledge of our own and other modern languages; and, in the last place, but not the least important, because of the relations which they bear to literary, historical, and scientific studies.

XV. PHILOSOPHY AND HISTORY.

Courses of study in these important subjects are now organized. To the study of Psychology and Ethics a year is given, and the same amount of time to European and American History. Under the latter head, the constitutional history and civil polity of the United States is included. The subjects are taught both by text-books and lectures, and the student is trained, as far as possible, to habits of independent research.

DEGREES AND COURSES OF STUDY.

The University offers three general degrees, viz.: Bachelor of Arts (A.B.), Bachelor of Philosophy (Ph.B.), and Bachelor of Science (B.Sc.) It also offers four special degrees, viz.: Civil Engineer, (C.E.), Mining Engineer (M.E.), Mechanical Engineer (Mech.Eng.), and Bachelor of Agriculture (B.Ag.)

In addition to these degrees, certificates of work done in the several departments will be granted, as hereafter stated.

The courses of study which lead to the above-named degrees can be learned from the following statements and schedules.

A Preparatory Course of two years' duration is provided for those students who enter the University directly from the common or district schools. This course includes the ordinary studies of the better grade of the high schools of the State. It is expected that the graduates of these schools can sustain examination in the entire Preparatory Course, and enter directly upon proper college work.

The Preparatory Course is shown in the following schedule:

PREPARATORY COURSE.

FIRST YEAR.

First Term—Algebra, from Quadratics; Physical Geography; Latin or German.

Second Term—Algebra, completed; United States History; Latin or German.

Third Term—Botany; General History; Latin or German.

Exercises in English Grammar and Composition one hour each week throughout the year.

SECOND YEAR.

First Term—Geometry; Human Physiology; Latin or German.

Second Term—Geometry, completed; Physics; Latin or German.

Third Term—Trigonometry; Physics; Latin or German.

Exercises in Rhetoric and English Composition one hour each week throughout the year.

Either Latin or German, as named above, is to be chosen for a two years' course. Students looking forward to the degree of Bachelor of Arts, or to the degree of Bachelor of Philosophy, will take Latin; candidates for other degrees will take German.

Text-Books—Algebra, *Loomis;* Geometry, *Loomis;* Trigonometry, *Loomis;* Physical Geography, *Guyot;* Human Physiology, *Huxley;* United States History, *Eliot;* General History, *Freeman;* Botany, *Wood*; Physics, *Norton.*

The text-books in Latin and German will be found under the heads of these departments on a subsequent page.

GENERAL AND TECHNICAL COURSES.

In the following schedules the studies required for the several degrees of the University are named. The character and amount of the work done in each can be further learned from the detailed statements in regard to the departments that follow the schedules. It will be observed that a considerable amount of the work is common to the several courses, and. further, that this common work is made, for the most part, synchronistic in the courses.

(A.) GENERAL COURSES.

FOR THE DEGREE OF BACHELOR OF ARTS.

Freshman Year.

First Term.	Latin, *Livy, Books I and XXI.*	Greek, *Leighton's Lessons.*	Chemistry, *Norton.*
Second Term.	Latin, *Cicero De Senectute.*	Greek, *Lessons and Anabasis, Book I.*	Chemistry, *Norton.*
Third Term.	Latin, *Horace, Odes.*	Greek, *Anabasis, Books II and III.*	Chemistry, 2-5, *Lectures.* Mineralogy, 3-5, *Dana.*

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	Latin, *Horace, Satires.*	Greek, *Memorabilia and Phaedon.*	Botany.
Second Term.	Latin, *Tacitus, Germania, and Agricola.*	Greek, *Herodotus' Selections.*	Zoology, *Packard.*
Third Term.	Latin, *Plautus, Terence, Quintilian.*	Greek, *Euripides, Alcestis.*	Zoology, *Packard.*

Junior Year.

First Term.	English Literature, *Anglo-Saxon.*	Greek, *Homer, Odyssey.*	Geology, *Le Conte.*
Second Term.	English Literature, *Middle English.*	Greek, *Sophocles, Œdipus.*	Geology, *Le Conte.*
Third Term.	English Literature, *Modern English.*	Greek, *Demosthenes.*	Astronomy, *Loomis.*

Senior Year.

First Term.	Psychology, *Porter.*	Rhetoric, *De Mille.*	Elective course in Science or History for the year.
Second Term.	Psychology, *Porter.*	Rhetoric and Logic.	
Third Term.	Ethics, *Bascom.*	Logic, *Jevons.*	

FOR THE DEGREE OF BACHELOR OF PHILOSOPHY.

Freshman Year.

First Term.	Latin, *Livy.*	French, *Grammar, Duffet.*	Chemistry, *Norton.*
Second Term.	Latin, *Cicero.*	French, *Masson's Classics*	Chemistry, *Norton.*
Third Term.	Latin, *Horace.*	French, *Masson's Classics*	Chemistry, 2-5, *Lectures.* Mineralogy, 3-5, *Dana.*

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	Latin, *Horace.*	French, *Moliere.*	Botany.
Second Term.	Latin, *Tacitus.*	French, *Corneille.*	Zoology.
Third Term.	Latin, *Plautus, etc.*	French, *Feuillet.*	Zoology.

Junior Year.

First Term.	History, *Hallam.*	English Literature, *Early.*	Geology.
Second Term.	History, *Yonge.*	English Literature, *Middle.*	Geology.
Third Term.	History, *Lectures.*	English Literature, *Modern.*	Astronomy.

Senior Year.

First Term.	Psychology, *Porter.*	Rhetoric, *De Mille.*	Elective course in Science for the year.
Second Term.	Psychology, *Porter.*	Rhetoric and Logic.	
Third Term.	Ethics, *Bascom.*	Logic, *Jevons.*	

FOR THE DEGREE OF BACHELOR OF SCIENCE.

Freshman Year.

First Term.	Analytical Geometry.	French, *Duffet.*	Chemistry, *Norton.*
Second Term.	Differential Calculus.	French, *Masson's Classics*	Chemistry, *Norton.*
Third Term.	Integral Calculus.	French, *Masson's Classics*	Chemistry, 2-5, *Lectures.* Mineralogy, 3-5, *Dana.*

Free-hand Drawing two hours each week throughout the year.

Sophomore Year.

First Term.	Elective course in Botany, Chemistry, or Physics for the year.	French, *Moliere.*	Botany, 3-5. Zoology, 2-5.
Second Term.		French, *Corneille.*	Zoology.
Third Term.		French, *Feuillet.*	Zoology.

Junior Year.

First Term.	Elective course in Botany, Chemistry, or Physics for the year.	Elective course from list of sciences already given, with addition of vertebrate Anatomy and Physiology.	Geology.
Second Term.			Geology.
Third Term.			Astronomy.

Senior Year.

First Term.	Elective course from Science or from Psychology and Ethics.	Elective course from list of sciences given above, with the addition of Geology.	Rhetoric, *De Mille.*
Second Term.			Rhetoric and Logic.
Third Term.			Logic, *Jevons.*

It will be observed that at the beginning of the Sophomore Year of the Bachelor of Science course an advanced course in science is to be selected from such branches as have been already studied in their elementary forms in either the Freshman Year or in the Preparatory Course. The choice at this time is therefore confined to the three following, viz., Botany, Chemistry, and Physics.

At the beginning of the Junior Year the list of electives is extended by the addition of Vertebrate Anatomy and Physiology, and at the beginning of the Senior Year by the addition of Paleontology, and also Philosophy and Ethics.

In the Senior Year of the courses for the degrees of Bachelor of Arts and Bachelor of Philosophy, there is also an election to be made by the student. In the former, he can choose from any of the sciences, the elements of which have been previously given, and also from History: in the latter, his election is confined to the sciences.

Rhetorical exercises are required of students in all the above-named courses throughout the Sophomore, Junior, and Senior Years.

(B.) TECHNICAL COURSES.

The courses for the special degrees of Civil Engineer, Mining Engineer, and Mechanical Engineer, agree with the course for the degree of Bachelor of Science for the Freshman Year. They also have several studies in common with all the courses already named, as will be seen by the schedules. The course for the degree of Bachelor of Agriculture differs to a considerable extent from the courses previously described.

FOR THE DEGREE OF CIVIL ENGINEER.

Sophomore Year.

First Term.	Surveying.	French.	Analytical Chemistry.
Second Term.	Descriptive Geometry.	French.	Analytical Chemistry.
Third Term.	Calculus.	French.	Analytical Chemistry.

Junior Year.

First Term.	Analytical Mechanics.	Geology.	Analytical Chemistry.
Second Term.	Mahan's Civil Engineering.	Geology.	Analytical Chemistry.
Third Term.	Astronomy.	Geology (Economic).	Analytical Chemistry.

Senior Year.

First Term.	Roads.	Physics.	Strength of Materials.
Second Term.	Drawing—Shadows and Perspective.	Physics.	Assaying.
Third Term.	Geodesy.	Physics.	Plans, etc.

FOR THE DEGREE OF MINING ENGINEERING.

Sophomore Year.

First Term.	Projection Drawing.	Surveying.	Analytical Chemistry.
Second Term.	Descriptive Geometry.	Mahan's Civil Engineering.	Analytical Chemistry.
Third Term.	Special Drawing.	Calculus.	Analytical Chemistry.

Junior Year.

First Term.	Geology.	Analytical Mechanics.	Analytical Chemistry.
Second Term.	Geology.	Metallurgy.	Analytical Chemistry.
Third Term.	Geology (Economic).	Metallurgy.	Analytical Chemistry.

Senior Year.

First Term.	Theory of Veins.	Metallurgy.	Strength of Materials.
Second Term.	Mining Engineering.	Plans, Specifications, and Estimates for Metallurgical Works.	Assaying.
Third Term.	Coal Washing and Mechanical Treatment of Ores.	Plans, Specifications, etc.	Mineralogy and Blowpipe Analysis.

FOR THE DEGREE OF MECHANICAL ENGINEER.

Sophomore Year.

First Term.	Projection Drawing.	French.	Mechanical Laboratory.
Second Term.	Descriptive Geometry.	French.	Mechanical Laboratory.
Third Term.	Calculus.	French.	Mechanical Laboratory.

Junior Year.

First Term.	Geology.	Physics.	Analytical Mechanics.
Second Term.	Geology.	Metallurgy.	Mechanism.
Third Term.	Astronomy.	Metallurgy.	Mechanism.

Senior Year.

First Term.	Thermo-Dynamics.	Physics.	Strength of Materials.
Second Term.	Prime-Movers.	Physics.	Technical Drawing.
Third Term.	Mill-work.	Physics.	Technical Drawing.

FOR THE DEGREE OF BACHELOR OF AGRICULTURE.

Freshman Year.

First Term.	Surveying.	Mechanical Laboratory.	Chemistry.
Second Term.	Civil Engineering.	Mechanical Laboratory.	Chemistry.
Third Term.	Roads, Drains, etc.	Mechanical Laboratory.	Chemistry, 2–5. Mineralogy, 3–5.

Sophomore Year.

First Term.	Structural Botany.	Zoology.	Veterinary Anatomy.
Second Term.	Systematic Botany.	Zoology.	Veterinary Anatomy.
Third Term.	Economic Botany.	Zoology.	Veterinary Anatomy.

Junior Year.

First Term.	Soils, Manures, etc.	Geology.	Physiology.
Second Term.	Farm Crops and Tillage.	Geology.	Physiology.
Third Term.	Farm Improvement and Management.	Geology (Economic).	Physiology.

Senior Year.

First Term.	Domestic Animals—Varieties, etc.	Rhetoric.	Diseases of Animals.
Second Term.	Breeding and Feeding Stock.	Rhetoric and Logic.	Principles of Treatment.
Third Term.	Dairy Products.	Logic.	Particular Diseases.

The range of instruction in the several subjects named above is more particularly defined in the following statements of the work provided in the different departments of the University:

DEPARTMENTS AND RANGE OF INSTRUCTION.

MATHEMATICS.

The preparatory department includes Algebra, Geometry, and Plane Trigonometry. In the Freshman Year, the subjects of Analytical Geometry, Differential Calculus, and Integral Calculus are taken up, and an additional term is subsequently given to the applications of Calculus in the Engineering courses.

CIVIL ENGINEERING.

The order of studies in this department can be learned from the schedule which exhibits the course required for the degree of civil engineer.

Text-Books.—The works of Loomis on Algebra, Geometry, and Astronomy. In parts of the course, works by Davies, Warren, Church, Gillespie, Mahan, Haupt, Worthen, and others.

In addition to the use and study of the text-books, the students are taught and practiced in the use of various astronomical and engineering instruments—the level, the transit, the plane-table, the sextant, the globes. They have practical field-work throughout the year, excepting only when the inclemency of the weather does not admit of it. The work consists in taking differences of level, running lines, measuring horizontal and vertical angles, determining the variation of the magnetic needle, finding the latitude of the pole star and by meridian altitudes of the sun; in fine, every variety of appropriate work which can be executed, is regularly, systematically, and thoroughly done.

PHYSICS.

ELEMENTS.

The principles of Physics, or Natural Philosophy, is taught in two terms of the Preparatory Course. A text-book is used as a guide for four exercises each week, one exercise, each week, consisting of lectures illustrated with apparatus.

ADVANCED PHYSICS.

The full course of Advanced Physics occupies two years, embracing three kinds of exercises, as follows, first: Graphical and mathematical methods applied; second—lectures on use of instruments, keeping notes, and reduction of observations; and third—personal experimentation in which the student himself uses the apparatus of the laboratory.

FIRST YEAR.

First Term—Graphics and Mathematics applied, four-fifths; Experiments, one-fifth.

Second Term—Physical Laboratory: Acoustics and Optics.

Third Term—Physical Laboratory: Heat.

SECOND YEAR.

First Term—Physical Laboratory: Heat.

Second Term—Physical Laboratory: Heat and Electricity.

Third Term—Physical Laboratory: Electricity and Magnetism.

In the five terms last named, the student uses the instruments of the laboratory in reviewing the work of others; or in original research. There are also combined with this, lectures on proper manipulation and care in keeping notes as conducive to trustworthy results; also the theory of errors as regards instruments, reduction of observations, etc. The student is enabled to pursue his experiments thoroughly and extensively by means of the apparatus of the department, which includes many rare and valuable instruments.

Works of Reference. Accessible to the Student.—Atkinson's Ganot's Physics, Deschanel's Physics, Kohlrausch's Physical Measurements, Pickering's Physical Manipulations, Stewart's Heat, Jamin's Physique, Clark and Sabine's Electrical Tables and Formulæ, Higgs' Electric Lighting, Schwendler's Electric Testing.

MECHANICAL ENGINEERING.

This course is intended for those who desire to prepare themselves either for the profession of Mechanical Engineering, for superintending the construction of machinery, or for managing machinery in manufacturing establishments. In it instruction in Principles is combined with practice. The former is mostly given by lectures, while the latter is confined to the Mechanical Laboratory.

The course includes the following special studies, all of which must be passed before taking the degree:

MECHANISM AND DRAWING—ONE YEAR.

Principles of Mechanism.

Machine Designing and Drawing.

Machine Drawing.

PRIME MOVERS AND MACHINERY—ONE YEAR.

Thermodynamics.

Prime movers.

Machinery and Mill-work.

Besides the above there will be required, for graduating:

Three terms of Elementary Laboratory Practice.

One term of Machine Construction in Laboratory.

One term of Strength of Materials.

EXPLANATION OF THE COURSE.

In the Principles of Mechanism are studied the parts of machinery by pairs; or, elementary combinations of mechanism. In this the form and arrangement of the parts necessary for securing the desired modification of motion is sought.

In the Machine Designing the student takes up some problem in the shape of a particular machine for a special purpose. The forms, dimensions, and arrangements of the parts are decided upon, and then a drawing is carefully made of the whole. Detail drawings to regulation size are then made, and finished in shade lines, as done in the best shops. The quality of these drawings is sufficient for the requirements of photo-engraving for illustrations upon circulars.

In Thermodynamics are studied the principles which form the groundwork of all heat engines.

In Prime Movers are studied all kinds of heat engines, such as steam, hot-air, etc., and also wind and water-wheels.

Mill-work and machinery takes up valve-gears, fly-wheels, governors, efficiency of parts of machines, strength of parts, etc.

The Mechanical Laboratory is intended for acquainting the student with the materials used in machine construction; with the forms customary in machinery; to impart a degree of skill in the use of tools, and a knowledge of the operations and practices of shops.

The first term consists of the actual use of tools in executing a set of forms chosen, with a view to supplying the greatest possible amount of practical instruction for the time. This is combined with weekly lectures on tools and their use.

The second term carries the above practice to the fitting together of parts, and to the use of machine tools, such as the lathe, planer, etc. This is combined with weekly exercises in designing and drawing of machine elements, such as cranks, bearing-boxes, stub-ends, etc.

The third term is fully occupied in fitting parts carefully together, as in the joints of machinery, and in finishing the surfaces by scraping, polishing, burnishing, etc This is in combination with a weekly exercise in the invention of simple machines for specific operations, such as bending wire staples, cutting wooden combs, etc.

The fourth term of Mechanical Laboratory practice is constructive. It is taken in connection with the principles of mechanism. In the latter, problems in mechanism are worked out, forms and dimensions assigned to the parts, and then these are executed in the Laboratory, resulting in models of mechanical movements for the cabinet.

Projects will be assigned to the student, from time to time, on topics connected with his studies, requiring him to take indicator cards, test the efficiency of boilers, visiting manufacturing establishments, etc., and report. Such reports should be neatly made out on the regulation papers of the Department. These will be taken, in part, for the examinations, and retained for the cabinet.

Text-books and Works of Reference.—Rankin's Steam Engine, and Machinery and Millwork; Weisbach's Mechanics; Willis's Principles of Mechanism; Belanger's Cinematique; Zeuner's Traité de la Chaleur; Neville's Hydraulics; Clausius and McCulloch on Heat; Sellers' Manual of Machine Tools; Shelley's Workshop; Unwin's Elements of Machine Design; Nicholson on Files and Filing.

CHEMISTRY.

All students who wish to obtain a degree are required to study Chemistry for two and two-fifths terms. During this time General Chemisty, together with its most important applications to the arts, is taught by the use of text-books and of lectures, illustrated, by an ever-growing collection of the materials used in manufactures, and by a very complete suite of experiments.

After the completion of this elementary course, those who desire to devote special attention to Chemistry enter the analytical laboratory, where they can carry on their work for two years or more. This laboratory work is *required* only of students in Civil Engineering and in Mining. Any other student may enter the laboratory if his time and his strength permit.

The course in Analytical Chemistry provides full instruction in all departments of the science. In connection with the ordinary work of Qualitative Chemisty, the student is taught the use of the spectroscope, and of the blow-pipe in Determinative Mineralogy. He is also employed in making various compounds, and, if his time permits, studies exhaustively one or more of the elements and its important compounds.

The course of Quantitative Chemistry includes both the gravimetric and volumetric methods. The analyses are at first confined to those compounds whose structure is known, and afterwards extended to such bodies as the student may require in the special branch of the science to which he desires to devote himself. Opportunity is offered for the study of coals, ores, minerals, fertilizers, soils, or of the useful and waste products in manufactures.

If the student desires, he will also be assisted in taking up in detail topics which relate to Agriculture, to Pharmacy, to Medicine, and to other sciences, or to arts in which the principles of chemistry are applied. A full course of assaying is given in the Mining Laboratory, which is open also to students of chemistry.

A summary of the course is given below.

REQUIRED OF ALL CANDIDATES FOR GRADUATION.

GENERAL CHEMISTRY—TWO AND TWO-FIFTHS TERMS.

Inorganic and Organic Chemistry, and the applications of Chemistry to the Arts.

SPECIAL COURSE.

FIRST YEAR.

First Term—Qualitative Analysis: Exercises in Blow-pipe and Flame Reactions, Reactions in the dry way, Reactions of Single Bases and Acids.

Second Term—Qualitative Analysis continued: Determination of Mixtures, Blow-pipe Mineralogy, Preparation of Compounds.

Third Term—Quantitative Analysis, Stoichiometry, Review of General Chemistry throughout the year.

SECOND YEAR.

Quantitative Analysis: Special studies in Chemistry applied to Pharmacy, to Agriculture, to Manufactures, and to the Arts.

Text-Books.—Norton's Chemistry, Fowne's Chemistry, Beilstein's Manual, Gallo-

way's Qualitative Chemistry, Will's Analytical Chemistry, Classen's Quantitative Chemistry, Fresenius's Quantitative Chemistry, Caldwell's Agricultural Chemistry.

Books of Reference.—Watt's Dictionary of Chemistry, Handwœrterbuch des Chemie, Gmelin's Hand-Book of Chemistry, Wagner's Chemical Technology, Graham-Otto's Chemie, Rose's Analytischen Chemie, Hoppe-Seyler and Gorup-Besanez's Physiologischen Chemie, Elderhorst's Determinative Mineralogy.

MINING AND METALLURGY.

The course in Mining Engineering secures to the student careful instruction, with ample allowance of time, in the three fundamental branches of the art—mining, preparation of the ore, and its metallurgical treatment. These courses will comprise lectures, the study of text-books, preparation of maps, drawings, and sections, and visits to existing works, with careful reports upon them, and practice in estimates and designs.

For Assaying, there is a full equipment of furnaces and ores for the dry assay, and the wet methods are taught in the chemical laboratory.

An ample collection of minerals is provided, comprising all species with which the mining engineer should be familiar, and to this the students have constant and familiar access.

Crystallography is taught by the aid of a complete collection of large wood models, made especially for the department, and containing every common form.

Text-Books and Books of Reference—Dana's Mineralogy, Egleston's Crystallographic Tables, Callon's Mining, Andre's Mining and Mining Machinery, Phillips's Metallurgy, Egleston's Metallurgical Tables, Rittenger's Aufbereitung, Gætzschmann's Aufbereitung, Bodemann & Kerl's Assaying, Mitchell's Assaying, Von Cotta's Ore Deposits.

GEOLOGY AND PALEONTOLOGY.

In the preparatory course one term is given to Physical Geography. In all of the college courses two terms of General Geology are required, and in two of the engineering courses a third term is added, in which the subject of Economical Geology is taken up. The former subject is provided for in the first and second terms of the Junior year, and the latter in the third term of the same year.

Le Conte's *Elements of Geology* is made the basis of the instruction in the general course; Economical Geology is taught by lectures.

Students desiring to pursue Geology further can elect it as one of their studies throughout the Senior year. In this year, particular attention will be given to the Geology and Paleontology of Ohio, for the illustration of which subjects the museum affords ample materials. These subjects will be taught by lectures, by practical work in the museum, and as far as possible by field practice.

Text-books and Works of Reference.—Le Conte's Elements of Geology, Dana's Manual of Geology, Lyell's Principles of Geology, Nicholson's Manual of Paleontology, Geological Reports of Ohio and other States.

AGRICULTURE AND BOTANY.

There are three years of work provided for the student in the department of Agriculture. In the first year, Soils are made a subject of examination, their geologic relations and origin are explained, their composition is shown, and how it is determined; the special adaptations of soils to particular crops and modes of culture is shown, and how to increase or restore exhausted fertility; the management of pastures and meadows; the character and value of the different grasses, clovers, and other forage plants; the culture of field crops, such as corn, wheat, oats, barley, rye, potatoes, etc.; also the value and application of animal manures, marl, gypsum, wood-ashes, lime, superphosphate, guano, and city sewerage.

The work named above occupies the first and second terms. During the remainder of the year the following subjects are treated: Work of the farm and improvements; Drainage, draining tools, and the manufacture of drain-tiles; Irrigation, its value and methods; Farm Roads, and how to make them; Fences, material, construction, and cost; Rural Architecture, applied to the erection of farm-houses, barns, stables, etc.; Farm Machinery.

The second year is mainly spent on the following topics: The natural history, description and adaptation of the various domestic animals—horse-training, cattle-feeding, dairy management, wool-growing, etc.

The work of the third year is spent on the general subject of Veterinary Medicine. The range of instruction can be learned from the topics named below: General principles, Causes, Symptoms, Elements of Disease; Classification of Diseases, Principles of Treatment, and Remedial Agents; Particular Diseases and Operations. These are carefully studied, and, so far as opportunity can be obtained, diseases are treated, and operations made, under the inspection of the class.

In Botany, a term of elementary instruction is provided in the preparatory course. The general facts of vegetable structure and classification are here treated. In the Sophomore year, another term is occupied in a course of lectures on Economical Botany. The above-named work is required of all candidates for the general degrees of the University. For students who desire more extended instruction in this subject a course of one year is provided, in which the three subjects named above, viz., Structural, Systematic and Economical Botany, are treated in more detail. This year's work is elective for any candidate for the general degrees, and is required of students seeking the degree of Bachelor of Agriculture.

ZOOLOGY AND COMPARATIVE ANATOMY.

The work of this department comprises the study of animal life, alike from the anatomical and the physiological aspect. Preparatory students receive, during the first term of their second year, instruction in this department in the elements of human anatomy and physiology. It is the object of this instruction to impart to these students such general knowledge of the structure and functions of their own bodies as will serve as a guide to their maintenance in a state of health and usefulness. Huxley's Lessons in Elementary Physiology will be used as a text-book, accompanied by lectures and by anatomical and histological demonstrations.

All students who are candidates for bachelor's degrees receive instruction in Zoölogy during their sophomore Year in this department. This instruction will be

by lectures, with collateral reading, demonstrations, and such laboratory exercises as the size of the classes from year to year will permit, and will have for its object to impart to the student a clear conception of the animal kingdom as a whole rather than a mere technical familiarity with one of its lesser divisions, to illustrate the objects and methods of classification, to indicate the more important of those morphological relations on which all intelligent classification is based, and to give some insight into those principles which underlie all the phenomena of animal life. All the classes of the animal kingdom (as well as the orders of the more important classes) will receive consideration, but the larger proportion of the student's attention will be directed to the classes and order of the invertebrata, partly because they include those forms least likely otherwise to come under their observation, and partly because a whole year may be afterwards given, by those who wish, to the study of the vertebrates.

At the beginning of the Junior Year, students who are candidates for the degree of Bachelor of Science have open to their election in this department a year of work in the comparative anatomy of vertebrates that may be antecedent to the special work in palæontology of the department of geology, or to a year of special work in physiology in this department, both of which are elective studies in the senior year. The work in vertebrate anatomy will be chiefly performed in the laboratory and the dissecting-room of the department, supplemented by lectures and such collateral reading as may from time to time be indicated.

To such Seniors as have performed the work in anatomy just described, and to no others, the advanced work in physiology and histology already referred to will be open. This will include lectures, demonstrations, and laboratory exercises in physiology, accompanied by a course of laboratory training in the facts and methods of histology. Foster's Text-Book of Physiology and Frey's Compendium of Histology will be used as text-books, and Foster and Langley's Practical Physiology and Shäfer's Histology as laboratory manuals.

Students who are candidates for the degree of Bachelor of Agriculture will receive instruction in this department, during their Sophomore Year, in Veterinary Anatomy. The greater portion of this time will be spent in the dissecting-room, Chauveau's Anatomy of the Domestic Animals being used as a manual. This will be followed in their junior year by the advanced work in physiology and histology already described.

The various classes of the department will be open to all special students who give satisfactory evidence of their fitness to enter them, and the facilities of the department will be freely afforded to all such who wish to pursue any special line of study connected with it.

DEPARTMENT OF ENGLISH AND MODERN LANGUAGES.

It is no longer a question that a thorough knowledge of the English language and literature, as they are, requires a knowledge of them as they were in the several stages of their growth, beginning with the beginning, Anglo-Saxon. The following course is, accordingly, a progressive, historical one:

First Term—Anglo-Saxon (Sweet's Anglo-Saxon Reader).

Second Term—Middle English (Chaucer's Prologue, Knight's Tale, etc., Clarendon Press edition).

Third Term—Modern English—Shakespeare (Hamlet, Hudson's edition; Tempest, Clarendon Press edition).

Besides these text-readings, lectures, historical and critical, upon literature, run throughout the year.

Rhetoric and logic belong to this department, and our year is divided about equally between them. Rhetoric, taught for its value both as an aid to original production and to the just criticism and enjoyment of the works of others, runs through the first term and into the second. The remainder of the second term and all of the third are devoted to logic, taught—first, as the foundation and all-controlling, though often hidden, law of all good thinking and writing; second, for its bearing upon the several sciences taught in the University; third, as indispensable in aid of philosophy and a course of philosophical reading; fourth, as a discipline for the mind, than which there is no better.

First Term—Rhetoric: De Mille's Elements.
Second Term—Rhetoric finished; Logic.
Third Term—Logic: Jevon's Elements.

Much of the instruction of this year is oral, either in the shape of formal lectures or daily expansions and illustrations of the text-books. A special course of fifteen lectures on Poetry supplements the text-book on Rhetoric, and from the beginning to the end of the course in Logic, lectures are given, notes of which are taken and recited from.

Books recommended for Reference.—Marsh: Lectures on Origin, and History of English Language; Lectures on English Language and Literature; Taine's and Craik's Histories of English Literature; Morris: English Accidence; Grein; Angelsächsische Bibliothek; Earl: Philosophy of the English Tongue; Hamilton's Lectures on Logic; Thomson's Outlines of the Laws of Thought; Mansell's Prolegomena Logica and Edition of Aldrich's Logic; Ueberweg's System der Logik; Quintilian's Institutes, Theremin's Rhetoric; Kames' Elements of Criticism; Hepburn's Manual of Rhetoric.

GERMAN AND FRENCH.

In view of the fact that mental training is a chief aim of every part of a college course; that, for purposes of literary culture, the main thing a college can give is the easy reading and accurate understanding of the masterpieces of the language studied; and that in an institution in which the sciences are so prominent as they are with us, it is of the utmost importance that the ability to use foreign text-books and works of reference be acquired as soon as possible, the so-called "Conversational Method" is not employed, and "learning to speak" French and German is an incident rather than an aim of the course. This is of purpose, and according to the best college usage and authority. I believe, too, that the careful and continuous use of the grammar, lexicon, and well-chosen text, with constant practice in composition, is the only sure and usually the shortest road to accurate and fluent speech. Where small classes, with little else to do, can spend several hours each day with the teacher, a different method will often succeed; but in a college, and to meet the ends of a college, more and better results are secured by the grammatical and literary method. Give the student an accurate knowledge of the inflections and syntax of a foreign

language; make him master of a full and idiomatic vocabulary of its words; let the reading of varied and well-selected texts teach him the peculiarities alike of the thought and rhythm of the speech of the men whose works he studies; accustom him to the oral and written rendering of the foreign text into English, and of English texts in the foreign speech, and he will no longer be helpless in the presence of a foreign poem or text-book, and learning to speak will be easily learned and remembered.

A two years' course in each of the two languages is provided for. In either course the student attends mainly to grammatical doctrine and literal versions, at first, and to the literary contents and characteristics of what he reads as he progresses. Lectures upon the respective literatures run through the second year of the courses.

GERMAN.

FIRST YEAR.

First and Second Terms—Steiger's Revised Edition of Ahn's Method.
Third Term—Schiller's Der Neffe als Onkel: Composition.

SECOND YEAR.

First Term—Goethe's Egmont; Lessing's Nathan der Weise.
Second Term—Nathan der Weise finished; Richter's Quintus Fixlein.
Third Term—Quintus Fixlein finished.

FRENCH.

FIRST YEAR.

First Term—Duffet: French Grammar and Exercises.
Second Term—Grammar continued; Masson's French Classics, vol. 5.
Third Term—French Classics continued.

SECOND YEAR.

First Term—Moliere: Les Fourberies de Scapin; Racine: Athalie.

Second Term—Corneille: Cinna; Racine: Andromaque; Bridge's History of French Literature.

Third Term—Feuillet: Le Roman dûn jeune homme pavre; Bridge's History continued.

Books of Reference—For German: Vilmar's Literatur Geschichte; Wackernagel's Geschichte der Deutschen Literatur; Hosmer's Hist. of German Literature; Bayard Taylor's Sketches of German Literature.

For French—Brachet: Grammaire Historique; Chevallet; L'Histoire de la langue Francaise; Vinet: L'Histoire de la Literature, du xviime Siecle; Parton: The French Parnassus; Van Laun: History of French Literature.

LATIN LANGUAGE.

The course in Latin includes two years of preparatory work, and two years of regular college work. The preparatory course is designed for beginners, and those

who have had irregular and partial training, and thus can not compete successfully in the college work with those who have been systematically taught in high schools.

The course of study is arranged as follows:

PREPARATORY LATIN.

FIRST YEAR.

First Term—Leighton's Latin Lessons.
Second Term—Leighton's Latin Lessons; Cæsar, *De Bello Gallico*, Book I.
Third Term—Cæsar, *De Bello Gallico*, Books I and II.

SECOND YEAR.

First Term—Virgil's *Æneid*, Books I, II, and III.
Second Term—Virgil's *Æneid*, Book IV; Cicero *In Catilinam* I, II.
Third term—Cicero *In Catilinam*, III, IV; *Pro Archia Poëta.*

COLLEGE COURSE.

FRESHMAN YEAR.

First Term—Livy, Books I and XXI.
Second Term—Cicero, *De Senectute, De Amicitia.*
Third Term—Horace, Odes.

During the year lectures are given on Roman History, and the reading of the authors is accompanied with exercises in Latin prose composition, and in written translation.

SOPHOMORE YEAR.

First Term—Horace; Satires, Epistles, and *Ars Poëtica.*
Second Term—Tacitus, *Germania* and *Agricola.*
Third Term—Plautus, *Captivi;* Terence, *Andria;* Quintilian, *Institutio Oratorica.*
Lectures are given during the year on the Latin language and literature.
Allen and Greenough's Grammar is used throughout the entire course.

Candidates for admission to the Freshman class are examined in Latin Grammar (Allen and Greenough's preferred); Latin composition; three books of Cæsar's *De Bello Gallico;* five orations of Cicero, and four books of Virgil's *Æneid.*

GREEK LANGUAGE.

The course in Greek now includes three years of college work, and is arranged as follows:

FRESHMAN YEAR.

First Term—Leighton's Greek Lessons.
Second Term—Greek Lessons completed; Xenophon's *Anabasis*, Book I.
Third Term—Xenophon's *Anabasis*, Books II and III.

SOPHOMORE YEAR.

First Term—Xenophon's *Memorabilia;* Plato's *Phædon.*
Second Term—Herodotus, Selections; Greek History.
Third Term—Euripides, *Alcestis.*
Lectures are given during the year on Greek History, Antiquities and the Drama.

JUNIOR YEAR.

First Term—Homer's *Odyssey.*
Second Term—Sophocles, *Œdipus Tyrannus.*
Third Term—Demosthenes; *Olynthiacs and Philippics.*
Lectures are given during the year on the Greek language and literature. Exercises in Greek prose composition constitute an important feature of the course. Goodwin's Greek Grammar is used throughout the entire course.

HISTORY AND PHILOSOPHY.

Elementary instruction in United States and General History is afforded in the Preparatory Course. One year of Advanced History is provided. This course is required of candidates for the degree of Ph.B., and is elective for the degree in arts. The subjects which receive attention during the year are: The History of the Middle Ages, The History of Modern Europe, and The Constitutional History and Civil Polity of the United States.

The instruction is by text-books and lectures, to which special work for the class is added. The results of the special study performed by each student are embodied in theses, which are read before the class.

The course in Philosophy extends through one year, embracing Psychology, History of Philosophy, and Ethics. It is required for the degrees in Philosophy and Arts, but is optional with candidates for the degree of B. S. A knowledge of the laws of thought and moral action is the end toward which the instruction in this course is directed. At the same time the history of Philosophy receives a large share of attention.

The work in these subjects is distributed as follows:

HISTORY.

PREPARATORY COURSE.

First Year.

Second Term—United States History (Eliot).
Third Term—General History (Freeman).

COLLEGE COURSE.

Advanced History.

First Term—The Middle Ages; text-book, Hallam. Lectures, especially on the English Constitution.

Second Term—Modern Europe; text-book, C. D. Yonge's Three Centuries of Modern History. Lectures on the present condition of the Great Powers.

Third Term—Constitutional History and Civil Polity of the United States. Lectures.

PHILOSOPHY.

First Term—Principles of Psychology; lectures on the History of Philosophy.
Second Term—Principles of Psychology; lectures on the History of Philosophy.
Third Term—Ethics; lectures on the History of Ethics.

Text-books and works of reference—The histories by Hallam, Sheppard, Sismondi, Gibbon, Martin, Von Sybel, Thiers, Alison, Motley, Dunham, Von Raumer, Von Ranke, Gervinus, Savigny, Bryce, Green, Freeman, Hume, Macaulay, Turner, Stubbs, May, Seeley, Arndt, etc., etc.

Constitutional History of the United States—Curtis' History of the Constitution; Von Holst's Constitutional History of the United States; Frothingham's Rise of the Republic; the Federalist; the works of Adams, Hamilton, Jefferson, Madison, Webster, and Elliot's Debates.

Psychology—Porter, Hamilton, Kant, Carpenter, Spencer, Bain, Maudsley.

History of Philosophy—Schwegler, Ueberweg, Lewes, and Bowen.

Ethics—Bascom, Calderwood, Spencer.

PROVISIONS FOR SPECIAL STUDENTS.

To students entering the University for the purpose of taking some special study, and who do not propose to complete a regular course, *full freedom in the selection of the branches which they will pursue is granted, subject only to the necessary limitation that they are prepared to take up with advantage the studies which they select.* They will enter the classes organized for the regular courses, and they can not be allowed to impair the quality of work done in the classes through their own inadequate preparation. Advanced students will find every facility for special work. The preliminary examinations are required of special students.

PROVISION FOR INSTRUCTION IN AGRICULTURE.

The University recognizes its obligations, imposed in the terms of the grant on which it is founded, to the great industrial interest of agriculture. This obligation it aims to meet in various ways. It fixes its standard of admission so that students may enter its classes from the common schools. It provides for thorough instruction in the branches of science on which Agriculture depends. It has established a professorship of theoretical and applied Agriculture. It has established a professorship of Botany and Horticulture. It has laid down a special course leading to the degree of Bachelor of Agriculture. It has instituted courses of lectures in the sciences relating to Agriculture and in theoretical Agriculture, to which the farmers of the State are invited without charge.

While it is believed that the varied and complex questions with which the farmer has to deal, justify and require, for their most successful treatment, the extended and thorough courses of study necessary for the degree of Bachelor of Agriculture, it is still recognized that comparatively few will return from a six years' course of study to the farm again, and, therefore, all possible advantages are offered to young

men f.om the country who enter the institution for a shorter time. The work of the department of Agriculture is shaped so as to give to this class as large a measure of service as possible for whatever time they are on college ground.

LITERARY SOCIETIES.

There are two Literary Societies in the University, the *Alcyone* and the *Horton*. Both are provided with rooms in the University building, the equipment of the Alcyone hall having been mainly furnished through the generosity of the late John G. Deshler, of Columbus. The Societies are vigorous and effective, and furnish to the student a very desirable training in public speaking and parliamentary order.

ADMISSION.

I. TO THE PREPARATORY DEPARTMENT.

For admission to the Preparatory Department of the University, students must pass a satisfactory examination in the branches taught in the common schools, viz.: Reading, Orthography, Writing, Grammar, Geography, Arithmetic, and Algebra through simple equations.

The attention of those proposing to enter the University is especially directed to the terms above given. A competent knowledge of the common school branches is required. The University does not undertake to do the work which the common schools are able and willing to do, viz., that of grounding the student in the elements of an English education. He must bring with him a fair measure of the training which these schools are prepared to give. If it be asked what is a competent knowledge of these branches, it may be answered that the candidate should certainly have knowledge enough of them to entitle him to a teacher's certificate from a county board of examiners.

Graduates of the high schools of the State are admitted to the Preparatory Department without examination. Applicants having a teacher's certificate of twelve months, are also admitted without examination, except in Algebra, where this study is not included in the certificate.

II. TO THE COLLEGE CLASSES.

For admission to the Freshman Class of any course, the student must sustain examination in the studies of the Preparatory Department, that lead to this course. The Preparatory Department, as now constituted, agrees very well with the courses of instruction in the better grade of high schools of the State. The full requisitions, then, for admission to college standing, are as follows:

English Grammar,
Common School Geography,
Physical Geography,
Arithmetic,
Algebra,
Geometry,
Trigonometry,
Botany,
Physics,
Human Physiology,
United States History,
General History,
Latin or German, to the amount of a two years' course.

Graduates of high schools of this State, in cities having a population of 5000 or more, by the census of 1870, and of such other high schools and academies of the State as give satisfactory evidence to the faculty of the efficiency of their courses of study, will, on presenting their diplomas, be admitted to the Freshman Class, in any course of study for which their previous high school work shall have fitted them.

Students who do not design to complete a regular course of instruction, are allowed to select such studies as they are prepared to carry on with profit to themselves and without detriment to the regular classes.

Students are admitted to advanced standing in any of the courses, on their sustaining examination in the work required in the University for such standing.

Students entering from other colleges are required to bring certificates of honorable dismission.

The University is open to students of both sexes, but there no buildings provided for the residence of young ladies on the College grounds. Boarding-places, in respectable families, are secured for such young ladies as enter the institution, but the faculty is not so situated that it can exercise supervision over their conduct outside of College hours. Parents, who place their daughters in the University, should be well satisfied as to their discretion, or else should leave them under the care and control of the family with which they board.

EXPENSES.

1. *College Dues.*—A charge of $5.00 a term, or $15.00 a year, is made against all students, under the head of incidental expenses. *There is no charge for tuition in any department of the University;* but advanced students in Chemistry and Physics are required to pay fees to cover, in part, the cost of materials consumed, and the deterioration of the expensive instruments employed. The fee in the Chemical Laboratory is $10.00 per term, and in the Physical Laboratory $7.00 per term. These dues are required at the opening of each term.

2. *Board.*—There are two dormitories on the College grounds, provided for the use of students. The smaller of these provides unfurnished rooms, *rent free*, to such students as desire to board themselves, and thus to reduce their expenses to a minimum. Twenty students can be accommodated in the building, two students being assigned to each room. The expense of living in this way falls below $2.00 per week.

The larger dormitory can accommodate seventy students. It is, for the present, turned over to the University club, *rent free.* Board, furnished room, fuel, light, and washing are, at present prices, supplied for less

than $3.00 per week. New students will not, however, be admitted to the club without special recommendation.

Boarding-clubs are, also, frequently organized in the neighborhood of the College, by students, in which expenses are kept at $3.50 per week, or even lower.

Board, with furnished rooms, can be obtained in private families within convenient distances of the College, at rates varying from $3.50 to $5.00 per week. The ruling rate may be taken as $4.00 per week for young men, and $4.50 for young ladies.

Free access to the College is secured by two lines of street railroads, which connect it with the central portions of the city.

There is a large amount of work on the College farm that can be performed to advantage by students, and for which they are paid at the current rates for such labor. A number of students defray all their college expenses by such labor. In the assigning of work, preference is given to students in the department of agriculture, and to those who are ready to devote a certain number of hours each day to the tasks required. *The University does not guarantee work to all applicants.*

A college uniform has been adopted, with which all members of the military organization are required to provide themselves. The cost of the uniform is about $25.00.

SUMMARY.

The expenses of a college year of thirty-eight weeks, will include the following items, viz.:

College dues	$15 00		$15 00
Board, room, etc., at $3.00 per week	114 00	at $4 50	171 00
Total	$129 00		$186 00

This estimate provides for light, fuel and washing, but does not include text-books nor charges for laboratory supplies. Students boarding themselves can reduce the lowest of these estimates by at least $30—making a total of $100.

RULES AND REGULATIONS.

The following rules and regulations, among others, are now in force in the University:

STANDING.

1. The standing of students shall be reported at the end of each term as "passed with merit." "passed," "conditioned," or "failed;

such standing to be determined by examination, written, wherever possible.

2. The expression "conditioned" signifies "subject to re-examination at the middle of the following term."

3. No student is allowed to take less than three, or more than four studies; and no student conditioned in any study will be permitted to take more than three studies the following term.

4. Students must pass in at least two of the studies of each term, in order to retain their place in college.

5. Students conditioned in more than one study, must pass a satisfactory examination in one of these studies before regaining their place in college.

6. Students failing in two of the studies of a term, forfeit their place in college thereby.

7. Students who fail in the term examinations, or in an examination for conditions, are required to take the study or studies in which they fail, on their occurrence, in the following year, except when excused by the faculty.

8. Students failing on a re-examination for a condition, are dropped from that class, if a continuous one.

9. Absence from any examination is construed as a failure therein.

10. Students in any three-term class who fail to attain the grade "passed" at the end of more than one term, shall be required to repeat the work of the whole year, unless excused by the professor in charge; and the students in any two-term class who are reported as "failed" at the end of the second term, may be required by the professor in charge to repeat both terms' work.

DEMERITS.

1. Absence and tardiness may be excused by the President; failures, by the professors in whose classes they occur.

2. Four demerits shall be recorded against a student for every unexcused absence from a class; two for every unexcused failure in recitation, and one for every unexcused tardiness; and other offenses shall be rated as the faculty shall, from time to time, determine.

3. When any student has received ten demerits in any one term, or twenty-five in the first two terms, or thirty in the year, notice thereof shall be sent to the parent or guardian of such student.

4. Any student who receives twenty demerits in any one term, thereby forfeits his connection with the college; and any student re-

ceiving thirty-five demerits in the first two terms, or forty in the year, forfeits his connection with the college.

TERM BILLS.

The payment of term bills is required of all students by the second Wednesday of each term, as the condition of remaining in college.

CALENDAR.

The Winter term commences on Thursday, January 6, 1881, and continues 12 weeks, closing on Wednesday, March 30.

The Spring term commences on Thursday, April 7, and continues 11 weeks, closing on Wednesday, June 22, (Commencement Day).

The Fall term commences on Thursday, September 14, and continues 14 weeks, closing on Wednesday, December 21.

CATALOGUE OF STUDENTS.

The following catalogue includes the names of students in attendance between November 1, 1879, and November 1, 1880.

The under graduate students of the University are arranged in the four following divisions, viz.:

(1.) Regular Students.
(2.) Special Students.
(3.) Preparatory Students.
(4.) Unclassified Students.

The first division includes the four college classes; the second includes students who have attained college rank by completing the preparatory course or its equivalent, but are now pursuing selected studies; the third division includes the students that are pursuing the regular preparatory course; while the fourth includes all other students.

GRADUATES—JUNE, 1880.

Edwin E. Corwin, A.B.
Arthur Cunningham, A.B.
Hiram D. Gregory, M.E.
J. Paul Jones, A.B.
John H. McCormick, Mech. Eng.
Sidney H. Short, B.S.
Florizel Smith, A.B.
Alice M. Townshend, A.B.
John C. Ward, A.B.

CERTIFICATE OF PROFICIENCY—JUNE, 1880.

Katherine A. Mathew (in English Literature, French, German and Drawing.)

RESIDENT GRADUATES.

Ferdinand Howald, A.B.
John H. McCormick, Mech. Eng.
John L. Morrison, C. E. (University of Michigan).

REGULAR STUDENTS.

Name.	Residence.	County.
Senior Class.		
Bates, Josephine M.	Irwin	Union.
Cherryholmes, William K.	Millersburg	Holmes.
Gill, Maggie H.	Hilliard	Franklin.
Hyatt, Edward	Augusta	Carroll.
Lewis, Charles M.	Circleville	Pickaway.
O'Brien, David	Worthington	Franklin.
Pool, Harwood S.	New York City	
Wood, Kenneth D.	Columbus	Franklin.
Junior Class.		
Baker, Chauncey B.	Osborne	Greene.
Brotherton, William	Cedarville	Greene.
Davis, Floyd	Ithaca, N. Y	
Fassig, Oliver L.	Columbus	Franklin.
Fay, F. Willis	Columbus	Franklin.
Glover, Sioux	Hilliard	Franklin.
Hyatt, Harry	Augusta	Carroll.
Jones, Willis S.	Big Prairie	Wayne.
Keffer, Frederick	Cleveland	Cuyahoga.
Makepeace, George D.	Cleveland	Cuyahoga.
Marvin, Frederick	Columbus	Franklin.
Wilgus, Horace L.	Conover	Miami.
Sophomore Class.		
Bradford, Joseph N.	Columbus	Franklin.
Donham, William W.	Lindale	Clermont.
Downerd, Edward C	Zanesville	Muskingum.
Dun, George	Dublin	Franklin.
Dun, John	Dublin	Franklin.
Ely, William A	Elyria	Lorain.
Fitch, Eliza D.	Columbus	Franklin.
Higbee, Charles E	Cleveland	Cuyahoga.
Howard, Charles J.	Barnesville	Belmont.
Hubbard, Frederick	Columbus	Franklin.
Knopf, George	Columbus	Franklin.
Lovejoy, Jesse R.	Columbus	Franklin.
McDowell, John A.	Columbus	Franklin.
Miller, William H.	McArthur	Vinton.
Robinson, Parl C.	Kenton	Hardin.
Sperr, Frederick W	Jefferson	Ashtabula.
Shedd, Frederick	Columbus	Franklin.
Van Harlingen, E. M.	Columbus	Franklin.
*Wilkinson, E. W.	Columbus	Franklin.

* Deceased.

REGULAR STUDENTS.—Continued.

Name.	Residence.	County.
Freshman Class.		
Allen, Horace	Troy	Miami.
Ackerman, Eli O	Columbus	Franklin.
Ackerman, Fremont	Columbus	Franklin.
Anderson, James T	Columbus	Franklin.
Cunningham, Andrew	Columbus	Franklin.
Galbraith, John H	Columbus	Franklin.
Gaskill, David L	Greenville	Darke.
Green, Clarence C	Middleport	Meigs.
Henderson, Lutrelle	Marysville	Union.
Kienzle, Frank	Columbus	Franklin.
Malone, William R	Conneaut	Ashtabula.
Miller, Charles C	Baltimore	Fairfield.
Miller, Walter M	Portsmouth	Scioto.
Mix, Melvin N	Avenue	Franklin.
Orton, Edward, Jr	Columbus	Franklin.
Ray, William D	Harrisonville	Scioto.
Sabine, Annie W	Richwood	Union.
Wikoff, John B	Columbus	Franklin.
Stewart, Harlow L	Norwalk	Huron.
Slusser, Sarah A	Louisville	Stark.
Vanderburg, Charles R	Columbus	Franklin.

SPECIAL STUDENTS.

Name.	Residence.	County.
Bates, Amelia	Irwin	Union.
Butler, Albert C	Columbus	Franklin.
Brown, Christopher N	Ironton	Lawrence.
Casey, J. Sheafe	Yellow Springs	Greene.
Claypole, Daisy C	Columbus	Franklin.
Davis, Horace S	Dayton	Montgomery.
Earl, Thomas M	Columbus	Franklin.
Flowers, Olive	Columbus	Franklin.
Helmick, O. D	Urbana	Champaign.
Hughes, John W	Columbus	Franklin.
Knopf, Eva	Columbus	Franklin.
Langfitt, William C	Millersburg	Holmes.
Longstreth, Edith E	Dayton	Montgomery.
Martin, Harry	Mt. Vernon	Knox.
McCullough, John C	Lima	Allen.
Moore, Henry C	Columbus	Franklin.
Mullay, Thomas	Columbus	Franklin.
Orton, Clara G	Columbus	Franklin.
Palmer, Charles O	Cleveland	Cuyahoga.
Reed, William F	Pomeroy	Meigs.
Spielman, John A	Tiffin	Seneca.
Streeper, Jacob D	Chillicothe	Ross.
Sweeney, Thomas D	Covington	Miami.
Swickard, Belle	Columbus	Franklin.

PREPARATORY STUDENTS.

Name.	Residence.	County.
	SECOND YEAR.	
Clark, J. William	Mechanicsburg	Champaign.
Bunn, Walter	Chillicothe	Ross.
Dann, Lyman R	Columbus	Franklin.
Dickey, Marcus R	Central College	Franklin.
Foster, Newton P	Sharonville	Pike.
Hanitch, Louis	Dayton	Montgemery.
Harrison, William H	Columbus	Franklin.
Hart, Elmer	Columbus	Franklin.
Heinlein, Andrew J	Bridgeport	Belmont.
Howard, Mary E	Westerville	Franklin.
Jones, James P	Big Prairie	Wayne.
Glover, Libbie	Hilliard	Franklin.
Lucas, Mary E	West Jefferson	Madison.
Morris, William D	Terre Haute, Ind	
Peters, William L	Columbus	Franklin.
Stevens, Claude J	Kenton	Hardin.
Terry, Harry K	Columbus	Franklin.
Thurston, Azor	Grand Rapids	Wood.
Wilfing, Charles J	Steubenville	Jefferson.
Vandevort, William P	Morrow	Warren.
	FIRST YEAR.	
Adel, Charles S	Columbus	Franklin.
Allcott, Frank L	Columbus	Franklin.
Armstrong, Phillip D	Tippecanoe City	Miami.
Ashinger, Frank A	Upshur	Preble.
Beatty, George W	Columbus	Franklin.
Benham, Harry T	Columbus	Franklin.
Blankner, Fred., Jr	Columbus	Franklin.
Braun, Charles N	Columbus	Franklin.
Brown, Colvin C	Cambridge	Guernsey.
Carlisle, Frank B	Hooker's Station	Fairfield.
Carroll, Clara	St. Clairsville	Belmont.
Chappelear, Samuel	New Lexington	Perry.
Conoway, John W	Arcadia	Hancock.
Converse, Edward J	Columbus	Franklin.
Cooke, Russel P	Chillicothe	Ross.
Crumley, Clarence M	Lancaster	Fairfield.
Cunningham, George S	Lancaster	Fairfield.
Davis, Charles H	Columbus	Franklin.
Devol, Laura	Marietta	Washington.
Devol, William S	Marietta	Washington.
Dozer, Martin T	Deavertown	Morgan.
Dun, Davis	Dublin	Franklin.
Dobyns, A. William	Hilliard	Franklin.
Eisenlohr, Berthold A	Dallas, Texas	
Evans, William H. S	Cincinnati	Hamilton.
Flannery, Michael J.	Fairfield	Greene.
Gordon, John L	Worthington	Franklin.
Hileman, William T	Campbellstown	Preble.
Hill, Frank E	Neville	Clermont.
Houston, Frederick	Marysville	Union.
Howard, Horton	Alton	Franklin.
Jeffries, May A	Mifflinsville	Franklin.
Kizer, William L	Lancaster	Fairfield.

PREPARATORY STUDENTS—Continued.

Names.	Post-Office.	County.
	First Year.	
Lindenberg, Louis B	Columbus	Franklin.
McClain, John A	West Lafayette	Coshocton.
McKinney, William H	Morrow	Warren.
Merion, Edwin	Columbus	Franklin.
Moore, Alvin A	Kenton	Hardin.
Munsey, William	Columbus	Franklin.
Negelspach, Otto	Millersburg	Holmes.
Neil William	Columbus	Franklin.
Nelson, Carlton T	Columbus	Franklin.
Nicklaus, Oscar	Logan	Hocking.
Oxer, Orange	Campbellstown	Preble.
Orr, James R	Chillicothe	Ross.
Parker, Edward E	Tymochtee	Wyandot.
Perry, Elmer E	Columbus	Franklin.
Peters, Harry B	Upper Sandusky	Wyandot.
Pfaff, Carl P	Columbus	Franklin.
Pleukharp, Charles	Columbus	Franklin.
Poland, August A	Columbus	Franklin.
Scott, Anna M	Columbus	Franklin.
Scott, May M	Columbus	Franklin.
Scott, Winfield	Columbus	Franklin.
Sabine, Wallace C	Richwood	Union.
Scheibell William	Columbus	Franklin.
Shafer, Benjamin	West Lafayette	Coshocton.
Shoemaker, Charles C	Columbus	Franklin.
Smith, Edmund S	Columbus	Franklin.
Stockwell, Harry	Columbus	Franklin.
Swickard, Charles R	Columbus	Franklin.
Sheperd, Jacob L	Osborne	Greene.
Terry, Harry K	Columbus	Franklin.
Thompson, Howard	Columbus	Franklin.
Thurston, Ella	Grand Rapids	Wood.
Tritt, William D	King's Creek	Champaign.
Veith, Veit	Columbus	Franklin.
Watt, Seru P	Jamestown, Neb	
Williams, Paul S	Scioto Furnace	Scioto.
Wilson, Roger C	Georgetown	Brown.

UNCLASSIFIED STUDENTS.

Names.	Post-Office.	County.
Akin, Park H	Columbus	Franklin.
Allen, Charles	Washington C. H	Fayette.
Allen, Frank M	Washington C. H	Fayette.
Ambos, Peter	Columbus	Franklin.
Amy, Charles S	Payne's Corners	Ashtabula.
Baird, Lida M	Columbus	Franklin.
Barcus Flora	Columbus	Franklin.
Barcus, Harry	Columbus	Franklin.
Beach, Charles M	Kelloggsville	Ashtabula.
Beymer, Alvin	Columbus	Franklin.
Bingham Edward T	Columbus	Franklin.
Bohrer, James M	Baltimore	Fairfield.
Bromley, Robert H	Columbus	Franklin.
Brown, J. E	Cambridge	Guernsey.
Burnside, Charles F	Pataskala	Licking.
Campbell, Marius R	Atwater	Portage.
Campbell, Jackson R	New Harrisburg	Carroll.
Collins, Thomas K	Barnesville	Belmont.
Cooke, Paul	Chillicothe	Ross.
Cornell, Will B	Columbus	Franklin.
Coulter, Guy	Columbus	Franklin.
Courtright, Eugene	Lithopolis	Fairfield.
Creighton, William F	Malvern	Carroll.
Cresap, R. E. L	Logan	Hocking.
DeFord, A. Frank	Carrollton	Carroll.
Devol, Seldon S	Marietta	Washington.
Dickey, Clayton L	Central College	Franklin.
Donaldson, Eli G	Columbus	Franklin.
Downey, Mary	Iowa City, Iowa	
Dyer, David N	Galena	Delaware.
Eastman, John C	W. Alexandria	Preble.
Ehler Frederick	W. Alexandria	Preble.
Erskine, George G	Youngstown	Mahoning.
Erskine, James	Youngstown	Mahoning.
Fisher, David A	Kenton	Hardin.
Floyd, Stephen E	Wintersville	Jefferson.
Fox, Herman S	Brookville	Montgomery.
Fullington, Charles P	Irwin	Union.
Gibbs, Will. R	Troy	Miami.
Gibson, Mary	Elyria	Lorain.
Guainans, Emile F	Montbéliard, France	
Hamilton, Charles S	Columbus	Franklin.
Harsh, Lewis M	Commercial Point	Pickaway.
Hawkes, Frederic W	Columbus	Franklin.
Hawley, Will. E	Conneaut	Ashtabula.
Hershey, Harry	Union	Montgomery.
Hine, Lucius A	Milan	Erie.
Hinman, Charles D	Columbus	Franklin.
Hoge, Wilmer	Cambridge	Guernsey.
Hoshor, J. C	Logan	Hocking.
House, William D	Columbus	Franklin.
Howells, E. Stanton	Massillon	Stark.
Hull, Alice M	Columbus	Franklin.
Huston, Joseph E	West Alexandria	Preble.
Hutchinson, Mary	Columbus	Franklin.
Innis, Sarah G	Columbus	Franklin.
Jones, Jennette	Hilliard	Franklin.
Kenny, Minerva	Columbus	Franklin.
Kenney, Melvin P	Isle St. George	Ottawa.

UNCLASSIFIED STUDENTS—Continued.

Name.	Post-Office.	County.
Keyes, Frank E	Columbus	Franklin.
Keyser, Isaac N	Columbiana	Columbiana.
Kinnear, Edward	Columbus	Franklin.
Kridler, William H	Columbiana	Columbiana.
Lakin, Milton C	Marble Cliff	Franklin.
Law, George W	Willoughby	Lake.
Lehner, Emma	Mifflinville	Franklin.
Lovejoy, Ellis	Columbus	Franklin.
Marshall, Anna	Marietta	Washington.
Marple, Charles A	Columbus	Franklin.
Martin, Walter H	Columbus	Franklin.
Marvin, Eva	Columbus	Franklin.
McDannald, C. E	Central College	Franklin.
McDonald, Edgar	Coshocton	Coshocton.
McEwen, James H	Wellsville, N. Y	
McFarlin, W. K	Coitsvile	Mahoning.
Mead, Charles V	Jefferson	Ashtabula.
Morgan, Charles F	King's Creek	Champaign.
Morrow, R. H	Steubenville	Jefferson.
Morton, George L	South Newberg	Geauga.
Morton, James W	Mt. Ephraim	Noble.
Myers, Noah	North Hampton	Clarke.
Newlove, William J	Columbus	Franklin.
Overholser, Henry	Alpha	Greene.
Packard, William D	Warren	Trumbull.
Paul, Charles A	Norwalk	Huron.
Pheneger, Parker W	Columbus	Franklin.
Pleukharp, Ella	Columbus	Franklin.
Pugsley, Harry	New Lexington	Perry.
Ramsay, William E	Delta	Fulton.
Richards, J. W.	Columbus	Franklin.
Reichenbach, Emanuel	Apple Creek	Wayne.
Rodgers, James L	Columbus	Franklin.
Root, Willis J	Leon	Ashtabula.
Royce, Walter A	Columbus	Franklin.
Sawyier, D. W. C., Jr	Columbus	Franklin.
Scott, Mary O	Columbus	Franklin.
Scurry, James	Columbus	Franklin.
Searle, Alice E	Berkshire	Delaware.
Selby, Augustus D	Bartlett	Washington.
Sharp, Zula M	Clintonville	Franklin.
Sinift, Orin V	Rushville	Fairfield.
Smith, Guy	Elyria	Lorain.
Smith, Lot L., Jr	Columbus	Franklin.
Smith, Philo C	Canton	Stark.
Snyder, David F	Springfield	Clarke.
Spurgeon, Mattie A	Clintonville	Franklin.
Stimmel, J. Turner	Columbus	Franklin.
Stubert, Frank K	Richwood	Union.
Shoemaker, Charles C	Columbus	Franklin.
Tarbell, David S	Georgetown	Brown.
Taylor, Frank.	Colnmbus	Franklin.
Thomas, John J	Columbus	Franklin.
Thompson, Owen P	Atwater	Portage.
Touvelle, William E	Celina	Mercer.
Turley, Charles L	Portsmouth	Scioto.
Uhler, Harry L	Marion	Marion.
Wade, William	Columbus	Franklin.
Waid, Lemuel F	Emery	Fulton.

UNCLASSIFIED STUDENTS—Continued.

Name.	Post-Office.	County.
Warner, Cora	Chillicothe	Ross.
Wear, George W	Marengo	Morrow.
Wellons, James W	Barnesville	Belmont.
Westfall, Lafayette	Covington	Miami.
Whetzel William A	Harveysburg	Warren.
Whitten, William	Columbus	Franklin.
Willard, Charles P	Columbus	Franklin.
Wilson, Stonewall J	Clarksburg, West Virginia	
Wright, Clarence H	Athens	Athens.
Wright, James M	Fredonia	Licking.

TREASURER'S REPORT.

COLUMBUS, OHIO, *November* 16, 1880.

HON. STEPHEN JOHNSTON, *Chairman of the Board of Trustees of the Ohio State University:*

DEAR SIR: I hand you herewith my tenth annual report of the financial transactions of the Ohio State University, for the fiscal year which closed yesterday.

This report, the same as that of last year, embraces—

I. A general cash statement, showing the receipts, expenditures, and balances of cash.

II. The cash transactions pertaining to the sale of the Virginia Military Lands from 1871 to date.

III. A statement showing the condition of the Endowment Fund, held by the State of Ohio, and pledged to the support and maintenance of the Ohio State University.

IV. A full statement of the cash received from whatever source, into my hands.

V. A detailed list of disbursements during the year.

Very respectfully,

HENRY S. BABBITT, *Treasurer.*

STATEMENT I.

A GENERAL STATEMENT OF CASH ACCOUNTS FOR THE FISCAL YEAR ENDING NOVEMBER 15, 1880.

HENRY S. BABBITT, *Treasurer, in account with the Ohio State University*:

DR.

Nov. 16, 1879.	To balance of cash on hand		$4,986 92
	To cash from the following sources, viz.:		
	From State treasury on account of the income of the Endowment Fund, balance of sum, accrued in 1879	$16,421 00	
	On account of $32,890 due from same source in 1880	11,445 00	
			$27,866 00
	From students' term bills:		
	Winter term, 1879–80	$1,206 00	
	Spring term, 1880	1,151 00	
	Fall term, 1880	1,397 00	
	Miscellaneous items	43 50	
			$3,797 50
	From proceeds of notes received for sale of Virginia Military lands	$2,506 29	
	Interest on such notes	298 91	
	Sale of Virginia Military lands	4,479 88	
			$7,285 08
	From rent of houses:		
	President Orton	$350 00	
	Professor Townshend	300 00	
	Professor Mathew	116 66	
			$766 66
	From miscellaneous sources, to wit:		
	Professor S. A. Norton, chemical materials sold to students	$162 47	
	C. E. Thorne, farmer, for coal sold	51 61	
	Coal sold to dormitory	6 68	
			$220 76
	From the State treasury for appropriations as follows:		
	To reimburse the University for expenses of trustees since 1871	$5,150 90	
	For trustees' expenses for 1880	350 00	

For chemical apparatus	$600 00		
For chemical analyses	600 00		
		$6,700 90	
Total receipts during the year			$46,636 90
Total receipts, including above balance			$51,623 82

CONTRA, CR.

Nov. 15, 1880. By expenditures as follows (for items see detailed statement).			
For support and maintenance of the University, viz.:			
For salaries of faculty, teachers, assistants, other officials and regular employes	$26,461 40		
For expenses of trustees	572 61		
For fire-insurance	100 00		
For other current expenses	1,904 93		
		$29,038 94	
For furniture and apparatus not included in department supplies		$114 64	
For library		137 83	
For farm expenses	$559 25		
For improvements	1,641 87		
For repairs	1,098 98		
		$3,300 10	
For University band		25 00	
For department supplies		1,612 16	
For expenses of Virginia Military Lands		2,223 65	
For amount paid into State treasury		12,073 28	
Total disbursements for the year			$48,525 60
Balance of cash on hand			3,098 22
Total receipts, including cash on hand November 15, 1879			$51,623 82

STATEMENT II.

VIRGINIA MILITARY LAND SALES.

The cash rececipts into the treasury from the proceeds of the sales of these lands, as reported to November 15, 1879, were			$24,139 37
Receipts during fiscal year 1880			7,285 08
Total receipts to November 15, 1880			$31,424 45
Total expenses on this account to November 15, 1879, as per report for last year	$12,066 09		
Expenses in 1880	2,223 65		
Total expenses to November 15, 1880			$14,289 74
Balance, showing net receipts to date			$17,134 71

Of this amount, the net receipts to November 15, 1879, were paid into the State treasury to the credit of the Endowment Fund of the University, as provided by law	$12,073 28
Leaving the net proceeds for the year just closed, subject to the order of the Board for payment into the State treasury	$5,061 43

STATEMENT III.

SHOWING THE AMOUNT OF THE OHIO STATE UNIVERSITY ENDOWMENT FUND, COMPUTED IN ACCORDANCE WITH THE PROVISIONS OF THE ACT PASSED FEBRUARY 10, 1870. (Revised Statutes, Sec. 8446).

Amount of fund as principal, January 1, 1880		$507,913 94
Add interest on same, six months, to July 1, 1880, at 6 per cent. per annum	$15,237 42	
Add interest on $34,500 of Franklin County Agricultural bonds to March 15, 1880	$1,207 50	
Add interest on last amount to July 1, 1880	21 13	
Add amount unpaid by the Treasurer of Franklin county, September 15, 1879	140 00	
Add interest on same to July 1, 1880	6 65	
	$1,375 28	
Add amount paid June 30, by H. S. Babbitt, treasurer Ohio State University, into State treasury, being net proceeds of sales of Virginia Military Lands to November 15, 1879	$12,073 28	
Total additions, first half year		$28,685 98
Making		$536,599 92

From which is to be deducted the payments made by the State from the income of the fund since last report, as follows:

Jan. 27, 1880—$1,421.00, with interest to July 1, 1880,	5	mos.	3	days	$36 23	
Jan. 29, 1880— 3,000.00	"	"	5	" 1	"	75 50
Feb. 27, 1880— 3,000.00	"	"	4	" 2	"	61 00
June 19, 1880— 3,000.00	"	"		11	"	5 50
" 30, 1880—12,073.28	"	"		...		.....
$22,494.28					$178 23	
Total deductions first half year						$22,672 51
Leaving amount of new principal July 1, 1880						$513,927 41

Amount of principal July 1, 1880		$531,927 41
Add interest on this sum to January 1, 1881	$15,407 82	
Add interest on Franklin county bonds due September 15, 1880, $34,500, at 7 per cent. per annum	1,207 50	

Add interest on last amount to January 1, 1881	21 13	
Total additions second half year		$16,636 45
Making		$530,563 86
From which is to be deducted the following payments:		
Oct. 9, 1880—$2,871.72, with interest to Jan. 1, 1881, 2 mos. 22 days	$39 25	
Nov. 1, " — 2,500.00, " " 2 "	25 00	
5,371.72	$64 25	
Total deductions second half year		$5,435 97
Leaving amount of fund derived from proceeds of sales of land scrip, etc., and accumulations thereto, till January 1, 1881 (less, of course, any sums that may be drawn between November 15, 1880, and January 1, 1881)		$525,127 89
Upon this sum interest at the rate of six per cent. per annum, compounded semi-annually, is payable, under the provisions of sections 8433 and 8446 of the Revised Statutes, to the Ohio State University. Besides this, a deposit made with the Treasurer of State by the Trustees of the Ohio Agricultural and Mechanical College, complying with provisions of an act passed January 20, 1871, of the seven per cent. bonds of Franklin county, amounts to*		$34,500 00
Making an aggregate fund, held in trust by the State for the University, (see note A), of		$559,627 89
Interest upon the above sums, computed upon the same terms, for 1881, will amount to		$33,922 67
Requisitions were made and warrants were issued upon the State Treasury during the fiscal year 1880, as above shown, to the amount of		$27,866 00
This sum includes a portion of the interest accrued and subject to draft in 1879, but not drawn until after the close of the fiscal year 1879, amounting to		16,421 00

* These bonds are now all past due the latest maturing September 15, 1880—interest has been paid in full, and the County Treasurer, P. W. Corzilius, Esq., informs me that interest will continue to be paid until provision is made for their redemption by the county. After the bonds are paid the proceeds will, under the law, remain in the State Treasury, and constitute a part of the irreducible debt of the State, upon which interest will be payable to the University.

NOTE A. In order that there may be no misunderstanding in regard to the amount of the irreducible fund of the University in the State Treasury, it is proper to state that the undrawn balances of accrued interest to January 1, 1881, as shown above, ($21,445.00), which the Trustees are authorized to make requisition for before that date, will probably be so drawn, and the principal be reduced to $538,182.89, but, which sum cannot be diminished by any authority vested in the Board of Trustees.

Making the amount received by the Treasurer of the University upon the appropriation of $32,890, for interest on the irreducible debt of the State in 1880, the sum of	$11,445 00
And leaving still subject to draft, if required by the University, and if drawn out prior to January 1, 1881, the further sum of	21,445 00
	$32,890 00

Of the above sum of $21,445, requisitions have already been issued by the Commissioners of the Sinking Fund for the sum of *five thousand* dollars, which are now in the hands of the Treasurer of the University, leaving the sum of $16,445.00 to be drawn upon prior to January, 1881.

The act of February 10, 1870 (see section 8446, revised statutes), requires the calculations of interest to be made by semi-annual rests, on the first of January and July of each year, but the fiscal year of the State and of the University ends on the 15th of November, and the accounts are all settled at that date. It has been held by the Attorney-General that the balances of appropriations undrawn on the first of January and July annually, revert to the parent fund, as part of the principal, which can not be diminished except by special legislation.

APPROPRIATIONS.

The following appropriations and authorized expenditures of the funds of the University have been made by the Board of Trustees for the fiscal year 1880:

Nov. 13, 1879		—The income of the Endowment Fund, so-called, for the support and maintenance of the University, viz.:	$32,890 00
Jan. 8,	1880	—Students' helps—Chemical Department	150 00
"	"	" Mathematical "	40 00
"	"	Supplies for Physical Department	50 00
"	"	" Chemical "	100 00
"	"	Use of Prof. Mathews' apparatus	100 00
"	"	Veterinary model	26 25
Feb. 25,	"	For work on College grounds	400 00
Mar. 23,	"	reimbursement of reasonable and necessary expenses of Trutees, appropriation by Legislature	5,150 90
Apr. 20,	"	For purchase of chemicals	600 00
June 19,	"	Physiological Laboratory	100 00
"	"	Agricultural Department—Model of horse	1,000 00
"	"	Mechanical "	300 00
"	"	Chemical "	300 00
"	"	Library	500 00
"	"	Students' helps—Department Physics	200 00
"	"	" " Chemistry	200 00
"	"	" " Mathematics	100 00
"	"	" " Latin and Greek	300 00
"	"	clerical work, President's office	75 00
"	"	" Mechanical Laboratory	25 00

"	"	salary, Librarian	$125 00
"	"	advertising	200 00
"	"	College band	25 00
"	"	net proceeds of Virginia Military Lands, to be paid into State treasury	12,073 28
"	"	Trustees' expenses (appropriation)	350 00
"	"	first half of N. E. Lord's salary (past session)	600 00
Oct. 14,	"	second half " " (present session)	600 00
		gas generator	150 00

ALBERT ALLEN, *Secretary.*

To H. S. BABBITT, *Treasurer O. S. U.*

STATEMENT IV.

SHOWING IN DETAIL THE CASH RECEIPTS FROM ALL SOURCES DURING THE YEAR ENDING NOVEMBER 15, 1880, BY HENRY S. BABBITT, TREASURER.

Date.	From whom received, and on what account.	Amount.	Total.
1879.			
Nov. 15	Balance of cash on hand		$4,986 92
	C. A. Barton, Agent O. S. U. Virginia Military land sales	$726 79	
	B. M. Reno, Virginia Military land, note	2 55	
	L. C. Moon, " " " note, $59; interest, $10.66	69 66	
	Jarrett Newman, Virginia Military land, note	5 00	
	S. A. Hoffer, " " " int. on notes	18 00	
	J. F. Miles, (lot 112), " " " notes and interest	112 50	
	D. Bumgardner, Virginia Military land, note, 83c; interest, $5.82	6 65	
			941 15
Dec. 18	A. & J. P. Newman, (lot 72), Virginia Military land, note	$10 00	
	Jos. Helterbrand, Virginia Military land, three notes, $42; interest, $1.68	43 68	
	F. J. Miller, Virginia Military land, note	24 00	
	Alfred McDaniel, " " " interest	5 00	
	J. M. King, " " " note, $10; int., $1.90	11 90	
	Jas. Parks, Virginia Military land, note, $30; int., $3.60	33 60	
	W. Parks, Virginia Military land, note, $15.78; int., $2.84	18 62	
	C. A. Barton, Agent, Virginia Military land sales, lot 68	200 00	
	Thos. Mathew, house rent for November	16 67	
	Edward Orton, house rent for November and December	70 00	
	Edward Orton, coal for dormitory	6 68	
			440 15
20	Jno. Collins, Virginia Military land, note, $19; int., $3.60	$22 60	
	A. Allen, Secretary, term bills	38 50	
			61 10
1880.			
Jan. 27	C. A. Barton. Agent, Virginia Military land sales	$300 00	
	Randolph Wilburn, " " " notes $146.96; interest, $16.04	163 00	
			463 00
	State Treasury, income of endowment		1,421 00
29	" " "		3,000 00
Feb. 5	Thos. Mathew, house rent for December and January	$33 34	
	C. E. Thorne, coal for College	51 61	
	C. A. Barton, Virginia Military land sales	200 00	
			284 95
27	State Treasury, income of endowment		3,000 00
28	Albert Dean, Virginia Military land, note	$30 00	
	C. A. Barton, " " " sales	70 00	
	Thos. Mathew, house rent for February	16 67	
			116 67
March 9	Edward Orton, house rent for January and February	$70 00	
	C. A. Barton, Virginia Military land sales	200 00	

STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
March 9	J. G. Freeman, Virginia Military land, note	25 00	
	A. & J. Newman, " " " note	15 00	
			$310 00
20	Albert Allen, term bills and damages	$1,206 00	1,206 00
23	State Treasury, reimbursement of Trustees' expenses		5,150 90
29	C. A. Barton, Agent, Virginia Military land sales	225 00	
	" " Capt. Barton's note	75 00	
			300 00
April 5	J. F. Miles, Virginia Military land, three notes, $38 73; interest, $3.02	$41 75	
	Jno. Dougherty, Virginia Military land, note, part	20 00	
			61 75
10	Sam'l Woods, " " " three notes, $45.33; interest, $7.67	$53 00	
	H. W. Russell, Virginia Military land, note, in part, $3.33	25 00	78 00
	H. W. Russell, Virginia Military land, $5\frac{5}{12}$ years interest, $21.67		
14	Johnson Allen, Virginia Military land, first payment	$88 34	
	W. W. Hoffer, " " " note, in part	40 00	
			128 34
17	W. & J. Liston, " " " notes, $87.09; interest, $32.76	$119 85	119 85
20	Daniel Nichols, Virginia Military land, note, $50; interest, $5.72	$55 72	
	C. A. Barton, Virginia Military land sales	289 28	
			345 00
28	E. A. Legg, " " " account of note	$50 00	
	J. W. Overturf, interest on notes of G. F. Newman and E. Simpson	12 18	
			62 18
May 12	Wm. Staley, Virginia Military land, note, $20; int., $6	$26 00	
	Margaret McAfee, " " " int. on two notes	5 00	
	N. J. Powell, " " " note, $30.50; interest, $8.50	39 00	
	Edward Orton, house rent for March and April	70 00	
	Thos. Mathew, " April	16 66	
			156 66
18	C. A. Barton, Virginia Military land sales	$59 75	
	J. B. McGrew, account of note	3 60	
			63 35
27	Dan'l Hux, Virginia Military land, note, $20.90; interest, $4.35	$25 25	
	A. R. Dugans, Virginia Military land, note, $25; interest, $1.50	26 50	
	Albert Dean, Virginia Military land	39 42	
	C. A. Barton, " " " sales	110 00	
			201 17
29	G. W. Robinson, " " " notes	$199 50	
	A. J. Powell, " " " note, $36.16; interest, 9c	36 25	
	Thos. Mathew, house rent	16 66	
			252 41
June 4	A. Allen, Secretary, term bills, $1143; trespassing, $8		1,151 00
18	State Treasury, income of endowment		3,000 00
	J. P. Freeman, Virginia Military land note	$24 00	
	A. & J. P. Newman, " " "	65 00	
			89 00

STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
1880.			
June 18	C. A. Barton, Agt., sales Virginia Military land	$788 85	
	same, " " " " bal. to date	1,115 37	
			$1,904 22
26	State Treasury, chemical analyses	$600 00	
	same, expenses of Trustees	350 00	
			950 00
29	Jacob Louman, Va. Military land, on acc't of note	30 00	
	Albert Allen, " " sale lot 75, Adams Co	106 50	
	Prof. S. A. Norton, apparatus, etc., sold	162 47	
	President Orton, house-rent, May and June	70 00	
	Prof. Townshend, " 1 year	300 00	
	Prof. Mathew, " 1 month	16 66	
			685 63
30	State Treasury, income on endowment	$3,000 00	
	same, " " bal. of income to January 1, 1880	3,000 00	
	State Treasury, on account of income accrued since January 1	6,073 28	
			12,073 28
Aug. 16	W. W. Hoffer, Virginia Military land note	30 00	
	S. A. Hoffer, " " "	25 00	
	W. S. Hall, " " "	32 00	
	Johnson Allen, " " " $35.34, and interest on 5 notes, $10.60	45 94	
	Elizabeth Davis, Virginia Military land, int. on note	5 22	
	Ezekiel East, " " " "	7 26	
	Ex-student (anonymous), through Pres't Orton, dues	5 00	
			150 42
	Bettie Allen, Virginia Military land notes	$27 00	
	same, " " " interest on 5 notes	4 05	
			31 05
Sept. 17	E. A. Legg, Virginia Military land note	$27 00	
	W. W. Hoffer, " " "	16 40	
	S. A. Hoffer, " " "	35 45	
	John Liston, " " "	32 00	
	J. G. Freeman " " "	75 00	
	A. M. King, " " " $50; interest, $7.87	57 87	
	Thos. O. Brown, Virginia Military land note, $60; interest, $7.10	67 10	
	A. W. Yankee, Virginia Military land note, $59.74; interest, $3.58	63 32	
			374 14
22	J. F. Compton, Virginia Military land note, $22; interest, $1.36		23 36
Oct. 2	W. McCoy, Virginia Military land note, $48.41; interest, $3.59	$52 00	
	Henry W. Russell, Virginia Military land, on account of notes	15 00	
	M. C. & L. C. Damarin, Virginia Military land note $64 37		
	M. C. & L. C. Damarin, interest, $2.57 and $2.44 5 01	69 38	
	M. P. Thompson, Virginia Military land note, $50; interest, $6.40	56 40	
			192 78
9	State Treasury, income of endowment		2,871 72

STATEMENT IV.—Continued.

Date.	From whom received, and on what account.	Amount.	Total.
1880.			
Oct. 13	Barnes & Satterfield, two Virginia Military notes, for $92 17 each $184 34		
	Interest on same 11 06		
			$195 40
14	State Treasury, amount of appropriations for analyses		600 00
Nov. 1	State Treasury, income of endowment		2,500 00
5	Isabella Harvey, five notes of $15 each $75 00		
	Interest on same 6 66		
		$81 66	
	Hiram Cooper, one Virginia Military land note $14 90		
	Interest on same 10 10		
		25 00	
	J. W. Smith, Virginia Militay land note $20 16		
	Interest on same 14 59		
		34 75	
	John P. Freeman, balance on Virginia Military land notes, $56; interest, $16.86	72 86	
	President Edward Orton, house rent	70 00	
			284 27
6	A. Allen, Secretary, fall term bills—		
	Incidental fees, etc	$1,115 00	
	Chemical laboratory fees	250 00	
	Physical " "	7 00	
	Rent of stalls	25 00	
			1,397 00
	Total receipts, including balance on hand November 15, 1879		$51,623 82
	Total disbursements during year (see next statement for details)		48,525 60
	Balance of cash on hand November 15, 1880		$3,098 22

STATEMENT V.

A DETAILED ACCOUNT OF DISBURSEMENTS, BY HENRY S. BABBITT, TREASURER, DURING THE FISCAL YEAR ENDING NOVEMBER 15, 1880.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1879.				
Nov. 15	1	Stephen Johnston	Expenses as trustee	$11 75
	2	T. J. Godfrey	" "	19 75
	3	S. H. Ellis	" "	17 15
	4	J. B. Jamison	" "	20 50
	5	C. A. Barton	Salary, $300; expenses, Va. Mil. lands, $395.03	695 03
17	6	C. M. Lewis	Instructor in Latin	37 50
	7	H. L. Wilgus	Services in President's room.	25 00
18	8	M. Dillon	Salary as engineer	35 00
22	9	N. W. Lord	Salary for November	120 00
	10	Jos. Millikin	" "	225 00
	11	A. W. McFarland	" "	225 00
24	12	Edward Orton	" "	275 00
26	13	J. R. Smith	" "	150 00
	14	John T. Short	" "	150 00
27	15	S. A. Norton	" "	225 00
	16	A. H. Tuttle	" "	225 00
28	17	Thomas Mathew	" "	85 00
29	18	Luigi Lomia	" "	60 00
Dec. 2	19	N. S. Townshend	" "	225 00
3	20	J. T. Anderson	Historical chart	10 67
4	21	W. Taylor	Cement and oil	1 86
	22	M. Dillon	Balance November salary	36 66
5	23	Cott & Hann	Printing	5 75
6	24	A. H. Tuttle	Zool. dep't supplies	13 48
16	25	S. W. Robinson	Salary for November	225 00
18	26	C. M. Lewis	Inst. in Latin and Greek	37 50
	27	H. L. Wilgus	" Mathematics	25 00
	28	Keffer & Marvin	Student assistants	75 00
	29	Sioux Glover	Assistant Librarian	37 50
	30	Edward Orton	Paid student assistant in Chemistry, $50; assistant in office, $30	80 00
	31	Chauncy B. Baker	Assistant in Zoology	50 00
20	32	R. W. McFarland	Civil Engineering supplies	5 87
	33	Royce & Pulling	Bolts, etc	4 65
	34	Alice Williams	Salary for November	55 00
24	35	Edward Orton	" December	275 00
	36	S. A. Norton	" "	225 00
	37	Jos. Millikin	" "	225 00
	38	N. S. Townshend	" "	225 00
	39	R. W. McFarland	" "	225 00
	40	A. H. Tuttle	" "	225 00
	41	L. Lomia	" "	60 00
	42	N. W. Lord	" "	120 00
	43	S. W. Robinson	" "	225 00
	44	J. R. Smith	" "	150 00
	45	J. T. Short	" "	150 00
	46	Thomas Mathew	" "	85 00
	47	Alice Williams	" "	55 00

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1879.				
Dec. 24	48	M. Dillon	Salary for December	$83 33
	49	A. D. Rodgers, P.M.	Postage	16 00
	50	J. Greenwood & Sons	Bolts, and labor on cresting	15 03
	51	J. M. & W. Westwater	Gas-fixtures	6 20
	52	Wassall Fire Clay Co	Pipes	19 60
27	53	T. J. Hand	6 volumes A. J. C. C. Register	22 50
	54	S. E. Samuel & Co	Laboratory supplies	7 95
1880.				
Jan. 8	55	S. Johnston	Trustee expenses	18 00
9	56	J. B. Jamison	" "	18 25
13	57	R. G. Hanford	Trees	25 00
	58	Uhlman & Glock	Drawing materials	4 65
	59	Martin Krauss	Days' work	28 88
	60	Wassall Fire Clay Co	Bricks and clay	9 34
	61	W. Fagg	Repairing pump	7 50
	62	Dennis Neal	34½ days' work	43 12
	63	Matthesson & Hegeler	Zinc plates	3 32
	64	C. E. Thorne	Bill of work on college grounds	105 65
	65	Gardner Bros	Tile, etc	24 50
	66	H. W. Derby & Co	Books	3 00
	67	E. B. Benjamin	Bone ash	6 50
16	68	John Mathews	Gas generator	150 00
	69	Thomas Mathew	Drawing apparatus	100 00
	70	A. D. Rodgers, P.M.	Postage on catalogues	20 00
28	71	Edward Orton	Salary for January	275 00
	72	S. A. Norton	" "	225 00
	73	Jos. Millikin	" "	225 00
	74	N. S. Townshend	" "	225 00
	75	P. Hayden & Son	Grates and lintels	35 15
	76	S. H. Ellis	Trustee's expenses	32 15
	77	M. Dillon	Account January salary	42 76
	78	same	Balance on January salary	40 57
	79	R. W. McFarland	Salary for January	225 00
	80	A. H. Tuttle	" "	225 00
	81	Luigi Lomia	" "	60 00
	82	S. W. Robinson	" "	225 00
	83	J. R. Smith	" "	150 00
	84	N. W. Lord	" "	120 00
	85	J. T. Short	" "	150 00
	86	Thomas Mathew	" "	85 00
	87	A. D. Rodgers, P.M.	Postage Sec'y	8 18
	88	Alice Williams	Salary for January	55 00
	89	Albert Allen	Salary to Secretary, on acc	150 00
31	90	A. D. Rodgers, P.M.	Postage	24 72
Feb. 1	91	N. S. Townshend	Model of horse's foot	26 85
5	92	S. Johnston	Trustee expenses	15 75
	93	T. J. Godfrey	"	32 85
	94	J. B. Jamison	"	17 80
	95	A. T. Thrall	Printing	2 50
	96	J. A. Rea, agent	Insurance on buildings, etc.	75 00
6	97	A. D. Rodgers, P.M.	Postage on reports	5 02
10	98	Wm. G. Dunn & Co	2 mats	4 30
11	99	G. M. Maris & Co	Hardware	10 60
	100	Wm. Taylor	Brooms, etc	6 60
	101	E. B. Armstrong	Copper tank, etc	56 50

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
Feb. 11	102	S. A. Norton	Chemicals	$10 97
	103	Nevins & Myers	Programmes	21 90
	104	Central Ohio Paper House	Envelopes	2 80
	105	Strobridge & Co	Diplomas	8 00
	106	Steinbarger & Hensel	Alcohol	4 60
	107	W. H. Leete	Legal services	28 25
12	108	S. Johnston	Trustee expenses	7 50
26	109	same	"	8 75
	110	J. B. Jamison	"	12 50
	111	T. J. Godfrey	"	18 36
	112	S. H. Ellis	"	12 50
	113	M. Dillon	Account salary as Janitor	40 00
	114	Edward Orton	Salary for February	275 00
	115	Prof. Norton	" "	225 00
	116	Jos. Millikin	" "	225 00
	117	N. S. Townshend	" "	225 00
	118	R. W. McFarland	" "	225 00
	119	A. H. Tuttle	" "	225 00
	120	Luigi Lomia	" "	60 00
	121	S. W. Robinson	" "	225 00
	122	J. R. Smith	" "	150 00
	123	N. W. Lord	" "	120 00
	124	John T. Short	" "	150 00
	125	Thomas Matthew	" "	85 00
	126	Alice Williams	" "	55 00
March 6	127	Edward Orton	Books	22 43
28	128	C. W. Lewis	Instructor 2d term	37 50
	129	H. L. Wilgus	" 1st term	22 50
	130	Clark Fahey	Repair work	54 60
	131	M. Dillon	Balance salary February	43 33
4	132	Isaiah Pillars	Legal services, V. M. lands	300 00
7	133	Wm. Taylor	Brooms	6 25
6	134	T. S. Vaughn	Freights, etc., labor equip's	12 89
	135	same	Freights and Met. Dept	2 99
8	136	J. K. Billings	Legal fees Va. Mil. lands	50 00
	137	Edward Orton	Freights, etc	51 72
	138	J. L. Gill	Lumber (Mech. Labaratory)	14 88
	139	G. W. Gleason	Scientific journals	22 60
	140	Steinbarger & Hensel	Alcohol	4 90
	141	A. D. Rodgers, P.M.	Postage	11 00
9	142	Albert Allen	Salary as Secretary	130 00
10	143	M. Dillon	Account salary for March	19 09
13	144	Miss Sioux Glover	Asst. Librarian salary	37 50
	145	Keffer & Marvin	Services as teachers	62 50
	146	G. D. Makepeace	Leader of band	15 00
	147	C. B. Baker	Asst. in Zoology	37 50
	148	David O'Brine	" chemical laboratory	50 00
	149	H. L. Wilgus	" Mathematics	22 50
	150	C. M. Lewis	" Languages	37 50
	151	Edward Hyatt	Ass't President's room	30 00
20	152	R. W. McFarland	Salary	25 00
23	153	J. Greenwood & Sons	Acc't of engine	220 00
	154	" "	Bal. on "	180 00
24	155	Jos. Millikin	Salary for March	225 00
	156	J. T. Short	" "	150 00
	157	C. E. Thorne	Farm improvements	400 00
26	158	Edward Orton	Salary for March	275 00

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
March 26	159	S. A. Norton	Salary for March	$225 00
	160	N. S. Townshend	" "	225 00
	161	R. W. McFarland	" "	225 00
	162	A. H. Tuttle	" "	225 00
	163	Luigi Lomia	" "	60 00
	164	S. W. Robinson	" "	225 00
	165	J. R. Smith	" "	150 00
	166	N. W. Lord	" "	120 00
	167	Thos. Mathew	" "	85 00
	169	M. Dillon	Bal. salary for March	64 24
	170	J. B. Jamison	Expense as Trustee	17 75
	168	Alice Williams	Salary for March	55 00
29	171	A. D. Rogers, P. M.	Postage for Secretary	6 00
	172	Zelotes Wood, Agt.	Insurance	25 00
April 3	173	M. Dillon	Acc't of salary for April	21 66
12	174	J. Greenwood & Sons	Supplies for Mech. Dep't	38 75
14	175	Lyonsdale Coal Co.	$208\frac{1749}{2000}$ tons coal	348 41
	176	M. S. Rocky	Repairing pump	12 00
	177	W. Halley	Supplies Chem. Dep't, $5.27; sundries, $17.73	23 00
15	178	S. A. Norton	Supplies Chem. Dep't	54 89
	179	G. M. Maris & Co	Glass	5 15
	180	B. D. Potts	Vise-jaws, etc.	9 10
	181	R. B. Adams	Lumber for Mech. Lab.	15 60
	182	S. A. Norton	Chem. Dep't supplies	3 15
	183	Siebert & Lilley	Visitor's register, etc.	11 75
	184	E. B. Armstrong	Chem. Dep't supplies	18 95
16	185	A. Allen	Salary as Secretary	70 00
17	186	Thos. Mathew	Drawing Dep't supplies	61 86
20	187	T. J. Godfrey	Expenses as Trustee	16 30
	188	J. B. Jamison	" "	12 00
	189	S. J. Johnston	" "	10 00
29	190	Edward Orton	Salary for April	275 00
	191	S. A. Norton	" "	225 00
	192	Jos. Millikin	" "	2 5 00
	193	N. S. Townshend	" "	225 00
	194	R. W. McFarland	" "	225 00
	195	A. H. Tuttle	" "	225 00
	196	Luigi Lomia	" "	60 00
	197	S. W. Robinson	" "	225 00
	198	J. R. Smith	" "	150 00
	199	J. T. Short	" "	150 00
	200	Thos. Mathew	" "	85 00
	202	M. Dillon	Bal. salary for April	61 67
	203	N. W. Lord	Salary for April	120 00
	201	A. H. Tuttle	Zoological Dep't. supplies	46 05
	204	Alice Williams	Salary for April	55 00
	205	J. & H. Berge	Crucibles	7 75
May 6	207	S. Johnston	Trustee expenses	9 00
8	208	M. Flynn	Lawn-keeper	20 00
	206	S. W. Robinson	Department supplies	14 67
12	209	Elliott, Jones & Co.	Letter-press	12 71
	210	G. M. Maris & Co.	Hardware	38 74
	211	B. D. Potts	Repairs Mech. Laboratory	4 65
	212	G. W. Gleason	Books for Laboratory	30 52
	213	Wassall Fire-Clay Co.	Drain-pipes	7 50
	214	F. Aerniger	Zoology case	32 50

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
May 12	215	Edward Orton	Sundry expenses	$60 00
13	216	N. W. Lord	Paid for Minining Department supplies	60 30
14	217	C. E. Thorne	Paid for work on lawn, etc	69 66
	218	S. W. Robinson	Department supplies	41 33
	219	Andrew Schwarz	Door-springs	2 50
	220	Albert Allen	Salary as Secretary, etc	80 00
	221	Lyonsdale Coal Co	Coal	26 25
	222	Whitall, Faltein & Co	Jars for Zoological Dep't	55 49
	223	S. W. Robinson	Ex. ch'd on Dep't supplies	13 45
	224	S. E. Samuel & Co	Potash	1 20
	225	Columbus Telephone Co	Use of telephone 1 year	50 00
	226	Henry S. Babbitt	Sal. 6 mos., $200; exp., $6.25	206 25
19	227	Columbus Transfer Co	Trans. charges on supplies	3 70
28	228	N. W. Lord	Salary for May	120 00
	229	Edward Orton	" "	275 00
	230	S. A. Norton	" "	225 00
	231	Joseph Millikin	" "	225 00
	232	N. S. Townshend	" "	225 00
	233	R. W. McFarland	" "	225 00
	234	A. H. Tuttle	" "	225 00
	235	Luigi Lomia	" "	60 00
	236	S. W. Robinson	" "	225 00
	237	Thos. Mathew	" "	85 00
	238	Alice Williams	" "	55 00
	239	J. R. Smith	" "	150 00
	240	J. T. Short	" "	150 00
	241	M. Dillon	" "	83 33
	242	J. F. Linton	Legal Record	2 00
	243	J. V. Flynn	Lawn-keeper, 1 month	35 00
29	244	C. M. Lewis	Instruction one-half term	37 50
June 1	245	Keffer & Marvin	Assistants in Physics	62 50
	246	Miss S. Glover	Assistant Librarian	37 50
	247	C. B. Baker	" Zoology	37 50
	248	C. M. Lewis	Bal. salary as instructor	37 50
	249	Edward Hyatt	Salary ass't teacher, etc	35 00
	250	David O'Brine	" chemist	50 00
2	251	Tim. O'Leahy	Repairs to college buildings	67 00
	252	A. Allen	Salary as Secretary	75 00
4	253	A. Ellis	Trustee expenses	7 20
8	254	Columbus Transfer Co	Freight, etc	2 52
4	255	W. Halley	Plumbing	39 35
9	256	A. Allen	Ex. (carriage and express)	3 15
	257	C. H. Williams	Printing 200 postal-cards	2 50
10	258	A. D. Rodgers, P. M.	Postage for President	8 00
	259	Royce & Pulling	Steam fixtures	17 08
	260	J. M. & W. Westwater	Gas-fixtures, "Alcyone."	38 00
	261	Siebert and Lilley	Blank-books	10 50
	262	Christian Jensen	Painting society room	10 00
	263	N. S. Townshend	Repairs to house	24 00
	264	Columbus Cabinet Co	Library table	12 00
18	267	C. E. Thorne	Farm expenses	150 00
17	266	S. Johnston	Expenses as Trustee	19 50
	265	S. H. Ellis	" "	11 10
	268	C. A. Barton, Agt.	Sal. and exps. Va. Mil. Dist.	1,115 37
19	269	Edward Orton	Salary for June	275 00
	270	S. A. Norton	" "	225 00

STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
June 19	271	Joseph Millikin	Salary for June	$225 00
	272	N. S. Townshend	" "	225 00
	273	R. W. McFarland	" "	225 00
	274	A. H. Tuttle	" "	225 00
	275	Luigi Lomia	" "	60 00
	278	N. W. Lord	" "	120 00
	277	J. R. Smith	" "	150 00
	276	S. W. Robinson	" "	225 00
	279	J. T. Short	" "	150 00
	280	Thomas Mathew	" "	85 00
	281	Alice Williams	" "	55 00
	282	M. Dillon	" "	83 33
	283	C. J. Wilfing	8½ days' repairs	12 75
	284	A. Ellis	Trustee expenses	18 00
	285	R. W. McFarland	Sup't. of grounds, 1 year	25 00
	286	same	Supplies for same	9 70
24	287	T. J. Godfrey	Trustee expenses	20 50
	288	J. B. Jamison	"	24 50
	289	S. Johnston	"	12 75
	290	S. A. Norton	Sundries for chem. dep't	15 49
26	291	Edward Orton	Expenditures by President	35 00
29	292	A. Allen	Special services	300 00
	293	H. S. Babbitt, treasurer	Net proceeds of Va. Military Land sales to Nov. 15, 1879	12,073 28
July 1	294	J. A. Flynn	Repairing mower	36 13
2	295	G. M. Maris	Twine	.75
	296	Edward Orton	Bal. of expenses	41 70
	297	Columbus Gas Fitting Co	Repairs and fixtures	4 00
	298	Strobridge & Co	Diplomas	10 00
	299	Elliott Jones & Co	Envelopes	2 15
	300	Siebert & Lilley	Pencil pads	4 98
	301	Osborn & Co	Sewing old carpet	2 00
	302	Cott & Hann	Printing circulars	32 25
	303	N. High Street Chariot Co	For Legislature	18 00
	304	Thomas Mathew	Dep't. supplies	5 67
	305	Patton Mf'g. Co	Sand	10 00
	306	Wm. Fish & Sons	Stone steps and settings	7 00
	307	J. K. McDonald	Carriage hire	8 00
	308	John A. Billings	Att'y. services Va. Mil. Land	35 00
	309	Leo. Weltz	Fruit and shade trees	100 00
24	310	T. J. Godfrey	Expenses as Trustee	13 55
	311	J. B. Jamison	" "	13 00
	312	S. H. Ellis	" "	11 10
29	313	M. Dillon	Janitor's salary	83 34
30	314	A. Allen	Salary as Secretary	75 00
August 3	315	A. Ellis	Expenses as Trustee	13 00
	316	J. R. McDonald	Plastering	26 00
	317	Columbus Transfer Co	Freight	4 48
	318	Dennis O'Neil	— days' work	21 00
	319	Halm, Bellows & Butler	Desk, mech'l. lab'y	27 00
	320	W. H. Ferguson	Sash and lumber	28 00
	321	Kilbourne, Jones & Co	Hardware for desks	24 44
	322	Averill Paint Co	Paints, etc	15 20
	323	Stitt, Price & Co	Lime	6 00
	324	Cott & Hann	Circulars	22 00
	325	Thomas Stephens	Plastering	3 37
	326	P. Hayden & Son	Castings	4 69

STATEMENT V—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
August 7	327	A. D. Rodgers, P.M.	Postage for Pres. and Sec'y.	$20 00
11	328	S. Johnston	(Postage) expenses Trustee.	9 00
18	329	M. Dillon	Account of salary	45 00
27	330	A. Allen	Salary as Secretary	70 00
28	331	A. Ellis	Expenses as Trustee	18 00
	332	Roofing Slate Paint Co.	Painting roof	60 48
31	333	L. S. Thompson	Services Fine Art Dep't	15 00
Sept. 2	334	S. H. Ellis	Expenses as Trustee	14 00
	335	T. J. Godfrey	" "	18 30
	336	J. B. Jamison	" "	14 50
4	337	J. A. Flynn	Painting at dormitory	13 55
	338	S. Johnston	Expenses, Prof. Thompson.	29 75
	339	Kilbourne, Jones & Co.	Hardware	8 16
	340	C. J. Welfing	Work on steam boxes	4 35
	341	Ned. Hughes	5 days' work	12 50
	342	Averill Paint Co	Alabastine	7 70
	343	Emrich & Pinger	Desk irons	21 12
	344	M. Dillon	Balance August salary	38 33
22	345	Luigi Lomia	Salary for September	60 00
	346	A. H. Tuttle	" "	225 00
	347	J. T. Short	" "	160 00
	348	Joseph Millikin	" "	225 00
	349	T. King	Refinishing rooms at dormitory	36 00
	350	N. W. Lord	Salary for September	130 00
	351	Edward Orton	" "	275 00
	352	S. A. Norton	" "	225 00
	353	N. S. Townshend	" "	225 00
	354	R. W. McFarland	" "	225 00
	355	S. W. Robinson	" "	225 00
	356	J. R. Smith	" "	160 00
	357	W. A. Mason, Jr.	" "	100 00
	358	Alice Williams	" "	65 00
	359	M. Dillon, janitor	" "	83 33
24	360	Geo. E. Waring, Secretary.	Ent's. in A. J. C. C. Register	9 25
27	361	Stephen Johnston	Trustees expenses	6 00
30	362	A. D. Rodgers, P.M.	Postage for President	5 00
Oct. 5	363	Dennis Neil, laborer	— days' work	21 00
	364	Aston, Huff & Co.	Three stoves	24 83
	365	Wm. Halley	Plumbing	72 65
	366	Martin Kelley	Hauling dirt	25 70
	367	A. Allen	Freights paid	1 50
	368	Columbus Cabinet Co	3 wardrobes	33 00
	369	Hahn, Bellows & Butler.	Stools	12 00
	370	W. A. Hershiser	Lumber	22 50
	371	Wassall Fire Clay Co.	Brick and clay	4 57
	372	Clark & Fahey	Work on stables	179 37
	373	N. E. Lovejoy & Son	Lumber for stables	365 51
	374	Ayres, Mithoff, Dann & Co	Locust posts	4 60
	375	Scioto Boiler Works	Repairs	8 30
	376	Kaiser & Bro.	Repairing roof	173 78
	377	Elliott Jones & Co.	Inks	1 20
	378	Daily Times	Advertising	3 50
	379	Myers & Brickell	"	3 50
	380	Comly, Francisco & Co.	"	2 25
	381	Kilbourne, Jones & Co	Nails	1 35

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
Oct. 5.	382	D. Van Nostrand	Books	$18 50
	383	J. K. Ebright	Carpenter work	18 25
	384	W. W. Scott	Work on dormitory	15 00
	385	Abbott, Montgomery & Stoner	Hardware	54 10
	386	Royce & Pulling	Repairing pump	34 65
	387	Columbus Transfer Co	Freight on chemicals	71 03
	388	Prof. Liugi Lomia	For the "band"	25 00
8	389	Edwin Alden	Advertising	199 00
9	390	Sidney A. Norton	Chemical apparatus	685 77
	391	Prof. N. S. Townshend	Traveling expenses	50 00
	382	M. Dillon	On account of salary	18 00
	393	Albert Allen	On salary as Secretary	75 00
28	394	M. Dillon	Balance of salary for Oct	65 33
	395	Edward Orton	Salary for October	275 00
	396	Sidney S. Norton	"	225 00
	397	Jos. Milliki	"	225 00
	398	N. S. Townshend	"	225 00
	399	R. W. McFarland	"	225 00
	400	Albert H. Tuttle	"	225 00
	401	Liugi Lomia	"	60 00
	402	S. W. Robinson	"	225 00
	403	J. R. Smith	"	160 00
	404	N. W. Lord	"	130 00
	405	Jno. T. Short	"	160 00
	406	Wm. A. Mason, Jr	"	100 00
	407	Allice Williams	"	65 00
29	408	H. L. Wilgus	Student's help, mathematics	25 00
30	409	Jerry Bresnahan	Lawn-keeper one month	36 00
Nov. 1	410	David O'Brine	Ass't in chemical dep't	25 00
	411	Miss S. Glover	Salary as Librarian	25 00
	412	Henry Hyatt	President's help	25 00
	413	C. M. Lewis	Ass't in Latin and Greek	25 00
3	414	Wm. Halley	Plumbing	17 40
	415	John Shea	Soap, oil, etc	27 51
	416	Cott & Hann	Paper	3 00
	417	W. A. Hershiser	Lumber	18 75
	418	Abbott, Montgomery & Stoner	Steam hose, etc	22 74
	419	Prouty & Hunt	Paint	32 35
	420	J. K. Flinn	Painting and glazing	22 14
	421	Scioto Boiler Works	Castings	34 66
	422	Storrs & Harrison	Lawn trees	10 00
	423	L. Westfall	Repairing stoves	1 25
	424	Aston & Huff	Castings	3 16
	425	A. H. Tuttle	Department supplies	38 41
	426	Wassall Fire-Clay Co	Sewer pipes	54 00
	427	Asa Gray	Flora Braziliensis	5 61
	429	Seibert & Lilley	Tuition term-book	9 75
	429	Wm. Taylor	Buckets	1 80
	430	W. A. Mason, Jr	Department supplies	88 45
	431	Columbus Transfer Co	Freight	7 05
	432	Frederick Keiffer	Ass't in physical labaratory	0 00
5	433	Lyonsdale Coal Co	Coal	271 71

STATEMENT V.—Continued.

Date.	No. of order.	To whom paid.	For what purpose.	Amount.
1880.				
Nov. 12.	434	C. E. Thorne	Work on lawn	$88 60
	435	Albert Allen	Salary as Secretary	140 00
	436	Henry S. Babbitt	6 mos. salary, $200; postage, $4	204 00
		Total disbursements		$48,525 60

Total disbursements	$48,525 60
Balance of cash on hand November 15, 1880	3,098 22
Total receipts, including balance on hand November 15, 1879, as per Statement No. 1V	$51,623 82

HENRY S. BABBITT,
Treasurer Ohio State University.

REPORT OF THE FINANCE COMMITTEE.

COLUMBUS, OHIO, *November* 18, 1880.

To the Board of Trustees of the Ohio State University:

We, your Committee on Finance, having this day examined the accounts and vouchers of the Treasurer, and compared them with the records in the possession of the Secretary, do hereby certify that the report of said Treasurer is correct, and that the statements therein contained, truthfully exhibit the condition of the finances of the University for the fiscal year ending November 15, 1880.

Respectfully submitted,

ALSTON ELLIS,
T. EWING MILLER,
T. J. GODFREY,
Finance Committee Ohio State University.

FARM DEPARTMENT.

REPORT OF FARM COMMITTEE.

HON. STEPHEN JOHNSTON, *President Board of Trustees, Ohio State University:*

SIR: Your Farm Committee offer the following report:

At the beginning of the year there was an unexpended balance in the State treasury of the appropriation made by the Legislature during the session of 1878–79, for farm improvements and stock, amounting to $604.70. During the session of 1879–80, a second appropriation, to the amount of $1,500, was made for the same objects, which was placed at our disposal, as the first one had been, making a total sum of $2,104.70, unexpended at the beginning of the year.

It has been deemed best to use the principal portion of these sums in the completion of the system of improvements commenced last year, and in similar work, designed to place the farm in condition for the most economical management. A detailed statement of the different objects for which these expenditures have been made, with the cost of each, will be found in the report of the Farm Manager, C. E. Thorne, which is herewith submitted. We would briefly call your attention to a few of the most important items:

1. The growth of the dairying business of the farm during the year 1879, and the increase of stock through the purchase of the herd of Jerseys, made it necessary to provide more stabling. To this end, the basement of the large barn was remodeled, and given entirely to the stabling of cattle.

2. To provide for the teams and for the farming implements, which had previously been housed in the large barn, the old barn which stood on the north side of the farm was torn down, and rebuilt near the main barn, with more than double its former capacity.

3. It was discovered during the winter, that some portions of the levees built for the purpose of protecting the farm from the river were not sufficiently strong, while it was also seen that the influx of back water, which had not been provided against, was likely to cause considerable inconvenience. The weaker places in the levees were, therefore, strengthened, and the system continued to and across the mouth of the "cut-off;" the whole, except the portion on the north line of the farm, being built wide enough for a wagon road, thus giving access to portions of the farm which have heretofore been inaccessible during high water.

It is difficult to estimate the value to the farm of this "river improvement," as a whole. It has cost nearly three thousand dollars, but, in addition to increasing the actual area of the farm by twelve acres of the best land, it has increased its productive acreage by at least twice as many more, through the protection of lands which were scoured by the river at every flood, upon which it was impossible to maintain a

fence of any description, and where the crops grown upon most of the few acres that were susceptible of cultivation, were liable to be swept away at any time.

4. In connection with the river improvement, it was decided to open the street located on the north line of the farm, and known as "Woodruff Avenue;" it being seen that this step would soon become a necessity to the public, while the filling required to make a road-way here will materially strengthen our barrier against the flood-waters of the river.

5. The excessive drouths of 1879, caused the loss of a considerable portion of our orchard stock, just planted. This has been replaced, and the small-fruit department extended, so that it is expected that the orchard will, henceforth, be a constant and increasing source of revenue, besides affording employment to students, and a means of practical instruction in Horticulture.

For the construction of these and other improvements, we have drawn upon the above-mentioned appropriations to the amount of $1,104.70, showing a balance of $1,000 in the State treasury, $650 of which is now due for improvements, which amount, when paid, will leave $350 subject to draft.

The Committee have now under consideration plans and purposes relating to the most judicious management of the farm during the coming year, which are not yet matured, but will be presented at the January meeting of the Board. The accounts of the Farm Manager have been compared with the vouchers, and found to be correct.

JAMES B. JAMISON,

Chairman of Farm Committee.

REPORT OF FARM MANAGER.

HON. JAMES B. JAMISON, *Chairman Farm Committee Ohio State University:*

DEAR SIR: I respectfully submit the following report of the operations of the Farm Department, for the year ending October 31, 1880:

FARM IMPROVEMENTS.

The series of improvements, begun last year under direction of your committee, has been carried nearly to completion. This work has interfered temporarily with the most economical management of the farm, but its completion will add very largely to its general appearance and productive capacity in the future.

These improvements have cost—

In material	$1,429 16
In labor	1,441 77
Total	$2,870 93

Of this amount you have furnished, from the "Farm Improvement and Stock" appropriations of the Legislature, $1,754.70, and the remaining $1,116.23 have been paid from a portion of the surplus earnings of the farm.

The above total cost is divided among the following items:

STATEMENT "A."

	Itemized cost of Farm Improvements.	Value of labor.	Cost of material.	Total cost.
1.	Re-fitting large barn for cattle	$23 60	$29 40	$53 00
2.	Moving and re-building horse-barn	320 95	594 71	915 66
3.	Protecting the farm from the river	460 50	42 60	503 10
4.	Opening and fencing Woodruff avenue	70 40	70 50	140 90
5.	Completion of orchard-planting	105 55	113 25	218 80
6.	Enclosing and watering bull-pens	48 25	169 33	217 58
7.	Fencing	105 80	219 15	324 95
8.	Making farm roads	37 90	.....	37 90
9.	Improvement of High street sidewalk	51 90	32 84	84 74
10.	Draining	30 87	20 00	50 87
11.	Clearing woodland	50 50	.....	50 50
12.	Paving piggery	25 22	32 75	57 97
13.	Paving barn-yard	18 10	.....	18 10
14.	Minor improvements	92 23	104 63	196 86
	Total	$1,441 77	$1,429 13	$2,870 93

The minor improvements referred to consisted in straightening and diking the water-course that crosses the farm from east to west, and which frequently overflows on account of the immense volume of water thrown into it from High street during heavy rains; in filling the old channel of this stream, abandoned a few years ago on account of the straightening of its lower end; in digging stumps, clearing the fields of stones and other work calculated to permanently improve the productiveness of the farm, and therefore not properly chargeable to current expense.

FARM CROPS, AND RECEIPTS AND EXPENDITURES.

The yield of all the crops of the farm, except grass, has been fair; the latter was injured by drouth in the Spring. Our domestic animals have not suffered seriously from any disease; and, although prices have been low, the season may be regarded as having been of more than average favorableness to farming operations.

The acreage and total yield and value of the various crops grown during the season, are given in statement "B," which is an epitome of all the transactions of the department during the year. The first and last columns are respectively the inventories of plants on hand at the beginning and at the end of the year; the second column shows the entire expenditures, and the fifth column the total sales of the year; the third column gives the total production of the farm, and the fourth column the total consumption of farm produce, labor and expense, in the production of the results shown in the third, fifth and sixth columns, including the depreciation in value of live-stock and implements through disease or wear.

STATEMENT "B".

SHOWING THE PLANT ON HAND AT THE BEGINNING AND END OF THE YEAR, WITH THE PURCHASES, SALES, PRODUCTION AND CONSUMPTION OF THE INTERIM.

Item.	On hand Nov. 1, 1879.		Bought.		Produced or increased in value.			Consumed, died, or decreased in value.		Sold.		On hand Oct. 31, 1880.	
	Number or amount.	Value.	Number or amount.	Value.	Acres.	Number or amount.	Value.	Number or amount.	Value.	Number or amount.	Value.	Number or amount.	Value.
Horses	8	$735 00	1	$90 00	.....	1	$90 00	.....	$30 00	.....	.....	10	$885 00
Hogs	72	339 00	.....	.....	.....	28	373 60	2	9 50	49	$329 10	49	374 09
Cattle	52	2,478 00	11	400 00	.....	11	532 26	.....	50 00	28	943 76	47	2,416 50
Implements	270	1,820 70	114	230 87	.....	.....	.....	40	24 17	.....	.....	348	2,027 40
Corn	2100 bu.	775 00	297 bu.	141 73	42	2560 bu.	893 00	2609½ bu.	973 15	347½ bu.	136 58	2000 bu.	700 00
Wheat	.....	.....	208¾ "	335 14	55	1376¾ "	1,306 01	.....	.....	1536½ "	1,555 53	[1] 77½ bu.	85 62
Oats	150 bu.	45 00	.....	.....	5½	234 "	70 20	307½ bu.	90 90	19½ "	7 20	57 "	17 10
Rye	60 "	36 00	.....	.....	2	36 "	[3] 34 88	.....	.....	74¾ "	56 86	[2] 21¼ "	14 02
Potatoes	100 "	60 00	18 bu.	14 75	2½	200 "	100 00	[4] 48 bu.	30 05	230 "	128 70	40 "	16 00
Beets	320 "	25 60	.....	.....	4	2000 "	150 00	320 "	25 60	.....	.....	2000 "	150 00
Hay	25 tons.	250 00	11¼ tons	85 00	30	50 tons.	500 00	32 tons.	285 60	2 tons.	29 40	52 tons.	520 00
Corn fodder	1110 shks.	166 50	156 shks.	23 40	.....	950 shks.	190 00	1266 shks.	189 90	.....	.....	950 shks.	190 00
Straw	30 tons.	90 00	2 tons.	5 00	.....	60 tons.	266 57	9¼ tons	25 00	32¾ tons	161 57	50 tons.	175 00
Milk	.....	.....	.....	.....	.....	32161 qts.	1,890 64	.....	.....	32161 qts.	1,890 64	.....	.....
Sorghum	.....	.....	.....	.....	3½	287 gals.	129 70	.....	.....	71¼ gals.	38 93	216¾ gals.	90 77
Garden produce	.....	.....	.....	.....	3	.....	130 09	.....	.....	.....	120 09	.....	10 00
Turnips	300 bu.	18 00	.....	.....	½	100 bu.	10 00	225 bu.	8 48	65 bu.	9 52	100 bu.	10 00
Pumpkins	8 tons.	16 00	.....	.....	1	20 tons.	50 00	16 tons.	36 00	1 ton.	5 00	11 tons.	25 00
Wood	10 cords.	13 50	.....	.....	.....	67 cords.	114 44	5 cords.	7 50	70 cords.	117 74	2 cords.	2 70
Feed	.....	.....	.....	187 02	.....	.....	.....	.....	170 64	.....	16 38	.....	.....
Miscellaneous produce	.....	13 50	.....	111 93	11	.....	241 06	.....	2 00	.....	353 01	.....	11 50
Expense	.....	.....	.....	750 10	.....	.....	.....	.....	741 10	.....	.....	[5]	9 00
Crop of next year	.....	623 16	.....	.....	.....	.....	.....	.....	623 16	.....	.....	.....	.....
Labor and superintendence	.....	.....	.....	4,490 10	.....	.....	[6] 209 44	.....	2,526 09	.....	330 93	[7]	295 75
Experimentation	.....	.....	Material ...	65 84	.....	.....	.....	.....	.....	.....	.....	[8]	170 84
Permanent improvements	.....	.....	"	1,429 16	.....	.....	.....	.....	.....	.....	.....	[8]	2,870 93
Total	.....	$7,504 96	.....	$8,360 06	160	.....	$7,281 89	.....	$5,848 84	.....	$6,230 94	.....	$11,067 13

[1] Seed of the crop of 1881.

[2] Five bushels of this item, value $3.30, used as seed.

[3] Part of this item represents increase of value over inventory.

[4] Part of this item represents decrease of value, the remainder is seed used.

[5] Cost of grass seeds, charged to crops of 1881.

[6] Value of labor of farm teams, included in "labor sold", in "improvements", and "experimentation."

[7] Expended on crops of 1881. The total amount of this expenditure is as follows:

77½ bushel seed wheat	$85 62
5 " seed rye	3 30
8 " grass seeds	9 00
Labor of manuring and sowing	295 75
Total	$393 67

The prospective value of the clover crop—60 acres—is not included in this item, as the fall pasturage and mowing has already more than repaid the cost of sowing.

[8] Material and labor.

It will be seen from the foregoing statement that the cash receipts during the year have been $6,230.94; if we deduct from this sum the expenditures for live stock, seeds, feed and miscellaneous produce and for labor re-sold, we shall have $4,569.02 as representing the sales of productions of the farm during the year. This sum was realized from the produce of 225 acres of land, there having been 65 acres in pasturage in addition to the 160 acres of crops enumerated above, an average gross return of $20.40 per acre.

The excess of the total value of the productions of the farm for the year, as shown in the third column of this statement, over the total value of produce consumed, as shown in the fourth column, is $1,433.05, which sum represents the net earnings of the farm for the year. The same balance is found by the following statement, which is based upon the inventories for the beginning and end of the year, together with the cash received from other sources than the year's productions, and expended for other purposes than the legitimate expenses of crop production:

STATEMENT "C."

FARM DEPARTMENT, OHIO STATE UNIVERSITY.

Dr.

To inventory of November 1, 1879	$7,504 96	
cash on hand " "	414 09	
cash furnished by "Farm Committee"	1,754 70	
balance found as profit	1,433 05	
		$11,106 80

Cr.

By inventory of October 31, 1880	$8,025 36	
cost of improvements made	2,870 93	
cost of experimental work	170 84	
cash on hand October 31, 1880	39 67	
		$11,106 80

The balance above found has been expended as follows:

In construction of permanent improvements	$1,116 23
experimental work	170 84
increase of inventory (less cash on hand Nov. 1, 1879)	106 31
cash on hand	39 67
Total	$1,433 05

This balance is equivalent to a little more than six per cent. on a valuation of $100 per acre for the land in cultivation.

THE DAIRY.

This portion of the farm business has nearly doubled within the past two years, our sales of milk amounting to $1,890.64 this year, against $957.53 last year. This result has been achieved through the labor of students, the immediate care of the cows and the selling of the milk being in their hands. The fact that it affords a

means of support to a number of young men who could not otherwise receive the advantages offered by the institution, taken in connection with the evident advantage to our customers of being able to procure milk of unquestionable purity, seem a sufficient justification for continuing the business.

The financial results of our dairy operations are shown by

STATEMENT "D."

DAIRY DEPARTMENT, OHIO STATE UNIVERSITY.

Cr.

By total sales of milk	$1,890 64	
value of milk fed to calves	94 00	
" of manure from 21 cows, @ $6	126 00	
		$2,110 64

Dr.

To cash cost of milking and care	$718 28	
use of horse in delivering	70 80	
cash expense and repairs	90 25	
cost of maintaining inventory	45 31	
keeping 21 cows for 12 months	735 00	
balance, profit	451 00	
		$2,110 64

The value of the milk fed to the calves is put at less than one-third what it would have brought if sold. In order to fill our stables with good cattle, we find it necessary to raise our best calves, even at an apparent loss. The value of the manure is a legitimate credit, since the entire cost of feeding and care is deducted from the gross receipts. This item is, probably, placed much too low. The profit-balance found represents a double-profit, one having already been made on the feed consumed, which is charged at market price, and which is chiefly, of course, a product of the farm.

Our dairy has not been free from the losses caused by the common ailments to which cows are subject. Such of these as have resulted in permanent decrease of value, are covered by the item of "cost of maintaining inventory," while those of a more temporary nature are included in the cost of keeping the herd, there being at no time more than fifteen to seventeen cows in milk.

THE GARDEN.

But little has been done, as yet, toward establishing a garden department, but what has been done shows that such a department may be established on the same principle as that on which the dairy is now conducted, and made not only a source of revenue to the farm, but a means of support and instruction to students.

CASH ACCOUNT.

The disposition made of the funds which have passed through my hands during the year, is shown by

STATEMENT "E."

C. E. THORNE, *Manager, in account with Farm Department, Ohio State University.*

Dr.

To cash on hand Nov. 1, 1879	$414 09	
cash received from Farm Committee	1,754 70	
cash received from sales of produce, etc	6,230 94	
Total cash receipts		$8,399 73

Cr.

By expenditures for ordinary labor	$2,454 94	
" student "	1,435 16	
salary for year	600 00	
To expenditure for labor and superintendence		$4,490 10
By cash paid for live stock	$490 00	
" implements	230 87	
" improvement material	1,429 16	
" experiment material	65 84	
" current expenses	1.654 09	
cash on hand	39 67	$3,921 48
Total cash expenditures		$8,399 73

FARM EXPERIMENTS.

The experiments made upon the farm during the year have cost—

In material	$65 84
In labor	105 00
Total cost	$170 84

These experiments were made under the direction of Dr. N. S. Townshend, Professor of Agriculture, and the following is a transcript of the report made to him of their results:

EXPERIMENTS IN WHEAT CULTURE.

1. *Varieties*—Clawson wheat has been grown upon this farm for four consecutive seasons. It manifests an increasing tendency to lodge, and does not excel other varieties in productiveness. It shows but little tendency to rust, however, and has never smutted with us, for which reasons it would be a good variety to raise, were it not for the discrimination made against it by millers.

Fultz has done well with us, being early, having a short straw, and being fairly productive. It has shown a slight tendency to smut.

Velvet Chaff has uniformly given fair crops. It is free from the smut known as *Tilletia caries*, but is sometimes affected by the less troublesome variety known as *Uredo segetum* (the "blast" which also affects oats); it is earlier than Fultz, and valued

by millers as highly as the Mediterranean, which variety it excels in stiffness of straw.

Arnold's Gold Medal has made a fair yield when all conditions were favorable. It ripens late, but very suddenly, and breaks down and shatters badly unless promptly harvested.

Four varieties, the Silver Chaff, Golden Straw, Sandomirka, and Yellow Missouri have been sent to us from the Department of Agriculture at Washington, since 1878. Of these, the Silver Chaff has been one of our largest yielders during each of the three seasons in which we have grown it. It's straw is stiffer than the Clawson, and its grain harder, while it is as free from all disease. Our first crop of this variety was a few days later than the Clawson in ripening, but it has grown earlier each year, and both varieties ripened at the same date this season, viz.: June 28.

The Golden Straw has yielded fair crops of plump, heavy grain. It is early, and has a short, stiff straw, but has shown some tendency to smut.

The Sandomirka is a wheat recently introduced from Poland. It ripens very late—eight to ten days after the Fultz—but promises to be valuable in flouring quality.

The Yellow Missouri proved a failure with us this season.

Three varieties were received last Fall from the State Agricultural College of Missouri, viz.: Tappahannock, Russian No. 2, and Zimmerman. Of these the Zimmerman promises to be valuable, having a short, stiff straw, and a large, hard berry. It is a red wheat, and quite early.

For two seasons we have endeavored, but unsuccessfully, to acclimate a very large grained, white wheat, imported by the late John H. Klippart, from Australia.

We have only endeavored to compare the productiveness of the seven varieties first named. Our tests indicate the following yields per acre under like circumstances:

Silver Chaff	33 bus.
Gold Medal	31 "
Sandomirka	30 "
Golden Straw	28 "
Velvet Chaff	28 "
Fultz	27 "
Clawson	26 "

During the season of 1879 several hundred bushels of seed-wheat of several varieties were sold from this farm to parties living in various sections of Ohio, and in several neighboring States. After the last harvest a circular letter was addressed to each of these parties, asking for information as to the yield per acre of the wheat sent to him, and as to the quality of its grain and straw. The replies received are summarized in the following tables:

I.—Silver Chaff.

Name of Producer.	Residence.		Kind of Soil.	Date of Sowing.	Quality of Straw.	Quality of Grain.	Bushels per Acre.	Variety compared with.	
	County.	State.						Name.	Y'ld.
J. H. Blain	Madison	Ohio.	Clay.	Sept. 20	Good.	Med'm.	20	Egypt'n	19
D. N. Hine	Erie	Ohio.	Sandy loam.	Sept. 20	Good.	Good.	25	Fultz.	22
J. W. Morris	Fayette	Ohio.	Clay.	Sept. 20	Poor.	Good.	40	Fultz.	40
Wm. H. Durbin	Williams	Ohio.		Sept. 28	Good.	Good.	27	Fultz.	27
H. C. Rudy	Stark	Ohio.	Yellow clay.	Sept. 17	Good.	Good.	30	Fultz.	35
Geo. H. Ruhlman	Morrow	Ohio.	Yellow clay.	Sept. 5	Good.	Good.	24	Fultz.	20
D. Culver	Richland	Ohio.	Clay.	Sept. 9	Good.	Good.	30	Fultz.	30
Howard Hagler	Fayette	Ohio.	Clay.	Oct. 4	Poor.	Poor.	20	Fultz.	20
Jno. H. Harp	Washington	Md.	Limestone.	Oct. 7	Med'm.	Med'm.	25	Fultz.	25
W. H. Rees	Fayette	Ind.	Sandy bottom.	Sept. 5	Good.	Med'm.	16	Fultz.	12½
Jos. A. Morgan	Monroe	N. Y.			Good.	Good.	25	Fultz.	35
E. M. Sheldon	Lorain	Ohio.	Dark loam.	Sept. 10	Good.	Good.	2	Clawson	27
H. C. Knoop	Miami	Ohio.	Clay loam.	Sept. 9	Good.	Good.	27½	Clawson	30
Thomas Loew	Allegan	Mich.	Clay loam.	Sept. 18	Good.	Good.	32	Clawson	25
University Farm	Franklin	Ohio.	Clay loam.	Sept. 23	Good.	Good.	33	Clawson	26⅛
Average yields							26¼		26¾

II.—Velvet Chaff.

Name of Producer.	Residence.		Kind of Soil.	Date of Sowing.	Quality of Straw.	Quality of Grain.	Bushels per Acre.	Variety compared with.	
	County.	State.						Name.	Y'ld.
Jno. C. Tisserat	Tazewell	Ills.	Black prairie.	Sept. 8	Good.	Good.	22	Fultz.	14
Reichardt & Son		Ills.		Oct. 1	Good.	Good.	30	Fultz.	22
R. I. Phillips	New Madrid	Mo.	Black clay.	Oct. 1	Good.	Good.	23	Fultz.	25
Jno. H. Studt	Wyandotte	Kan.	Black loam.	Oct. 21	Good.	Good.	20	Fultz.	25
Jno. H. Harp	Washington	Md.	Limestone.	Sept. 30	Good.	Good.	33	Fultz.	38
Jos. A. Morgan	Monroe	N. Y.			Good.	Good.	28	Feltz.	35
D. E. Fenn & Son	Summit	Ohio.	Sandy loam.	Sept. 20	Good.	Good.	27	Fultz.	40
Thos. Sterrett	Erie	Pa.		Sept. 1	Good.	Good.	20	Fultz.	25
Thos. Loew	Allegan	Mich.	Clay loam.	Sept. 18	Med'm.	Good.	30	Clawson.	25
Geo. McKerrow	Waukesha	Wis.	Limestone.	Oct. 1	Good.	Good.	25	Clawson.	27
University Farm	Franklin	Ohio.	Clay loam.	Sept. 28	Good.	Good.	28	Clawson.	26½
Average yields							26		27½

III.—ARNOLD'S GOLD MEDAL.

Name of Producer.	Residence.		Kind of Soil.	Date of Sowing.	Quality of Straw.	Quality of Grain.	Bushels per Acre.	Variety compared with.	
	County.	State.						Name.	Yl'd.
Wm. H. Scott	Hamilton	Ohio.	Bottom.	Sept. 23	Poor.	Poor.	5	Mich'n Amber.	20
David Cowan	Belmont	Ohio.	Black.	Sept. 10	Good.	Good.	25	Fultz.	25
John Brown	Preble	Ohio.	Black.	Oct. 5	Good.	Good.	18½	Fultz.	23
Geo. Burr	Medina	Ohio.	Sandy loam.	Sept. 15	Good.	Good.	25	Fultz.	30
Wm. H. Durbin	Williams	Ohio.		Sept. 28	Good.	Med'm.	18	Fultz.	27
A. C. Beckwith	Huron	Ohio.	Black sand.	Sept. 15	Good.	Poor.	24	Fultz.	35
Jno. H. Harp	Washington	Md.	Limestone.	Sept. 29	Poor.	Poor.	20	Fultz.	20
C. H. Merrit	Clarke	Ohio.	Clay.	Sept. 12	Good.	Good.	18	Clawson.	18
Davis Hadden	Muskingum	Ohio.	Limestone.	Sept. 15	Good.	Good.	11	Clawson.	25
Geo. McKerrow	Waukesha	Wis.	Limestone.	Oct. 1	Good.	Good.	25	Clawson.	27
S. Price	Belmont	Ohio.	Clay.	Oct. 1	Good.	Good.	30	Clawson.	16
University Farm	Franklin	Ohio.	Clay loam.	Oct. 1	Poor.	Good.	31	Clawson.	26½
Average yields							21⅔		24¼

IV.—SANDOMIRKA.

Name of Producer.	Residence.		Kind of Soil.	Date of Sowing.	Quality of Straw.	Quality of Grain.	Bushels per acre.	Variety compared with	
	County.	State.						Name.	Y'ld.
A. McFarland	Washington	Ohio.	Clay.	Sept. 30	Good.	Good.	25		
C. H. Merritt	Clarke	Ohio.	Clay.	Sept. 18	Good.	Good.	25	Clawson.	18
R. Bloomer	Kent	Mich.	Black sand.	Oct. 1	Good.	Medi'm.	15	Clawson.	25
A. Lewis	Roanoke	Va.	Clay.	Oct. 25	Good.	Good.	35	Fultz.	13½
W. C. Snook	Vinton	Ohio.	Clay.	Sept. 30	Good.	Good.	24	Fultz.	15
W. H. Scott	Hamilton	Ohio.	Bottom.	Sept. 23	Good.	Medi'm.	18	Mich'n Amber.	20
University Farm	Franklin	Ohio.	Clay loam.	Oct. 1	Good.	Good.	30	Fultz.	27
Average yields							24½		19⅔

It will be noticed that in most cases the Fultz or Clawson has been used as a standard of comparison. The following summary gives the average of the reported yields of those varieties, together with the others distributed by us:

V. COMPARATIVE YIELDS.

Fultz	24	reports	average	25¾	bushels	per acre.
Clawson	10	"	"	23¾	"	"
Silver Chaff	15	"	"	26¼	"	"
Velvet Chaff	11	"	"	26	"	"
Gold Medal	12	"	"	21⅔	"	"
Sandomirka	7	"	"	24½	"	"

A few of the reports received were incomplete, either from failing to give the yield of the wheat used as a comparison, or from giving only estimated yields. Such have generally been excluded, as also several from sections where wheat of all varieties has failed to fill from climatic causes. These failures have seemed to be more frequent south of the fortieth parallel.

From the general tenor of the letters from which the above reports have been taken, I draw the following inferences:

1. The silver Chaff wheat, while capable of large yields, and while showing excellent qualities of grain and straw, may yet prove to be somewhat sensitive to climatic changes, especially when sown upon black lands. In speaking of the quality of its straw one correspondent says: "I do not believe any land can be too rich for it," which coincides with our own experience. Many praise it, but with some it has lodged. The quality of its grain has generally been satisfactory, but there have been a few cases in which it has seemed to suffer more than other varieties from the peculiarity of the past season, which caused thousands of acres of wheat to shrivel while filling, in some cases almost to the destruction of the crop.

2. While the Velvet Chaff has not yielded quite so heavily as the varieties with which it was immediately compared, its yield has still been considerably above the average, as shown by table V. In but one case is its straw ranked as anything but first-class, and in but two cases has the grain been poor; these were in Virginia by the side of Fultz, which made seven and thirteen bushels to the acre "badly shrunken." The Velvet Chaff has seemed to be especially adapted to the black prairies of Illinois, all reports from there being favorable. In one case it escaped the chinch-bug, on account of its earliness, while all other varieties suffered. In another case a car-load was ordered for this year's seeding as the result of last year's experiments.

3. The Gold Medal has suffered considerably from the unfavorableness of the season; winter-killing badly in some cases, and failing to fill in others, while in several instances the straw is reported as having broken badly. This wheat has shown itself capable of great yields under favorable conditions, but the indications are that it will not prove adapted to a large extent of country.

4. I can speak less confidently of the Sandomirka than of any of the previously named varieties; the tests with it were made on a small scale, as we sold it only by the pound. In two cases it failed entirely, while in Roanoke county, Virginia, it made a fine crop where all other varieties failed. Our own experience during two seasons has been favorable. Its extreme lateness—ten or twelve days later than Fultz—is against it for most sections, but the excellent quality of its grain and straw justifies a further trial.

In addition to the above varieties we distributed a few lots of the Golden Straw and Yellow Missouri wheats, from the results of which we conclude that the Golden Straw will prove a valuable variety on strong clay or sandy lands, but that it should be sown carefully on black lands, and never on very thin soils. From experiments made on this farm, we find that it requires heavier seeding than some other varieties. It is very early, the straw is short and stiff, and the grain, under favorable circumstances, is very heavy.

The Yellow Missouri failed generally, but made a fine crop in Washington county, Maryland.

A further inference which seems fairly deducible from our tables, is that the

Clawson is not our most productive wheat. We have noticed on this farm that the straw of the Clawson appeared to be losing its stiffness, while the grain seemed to be improving in quality. This improvement in the grain has not been maintained this season, however, while the buyers of the vicinity have finally executed their threat of lowering the price for Clawson from five to ten cents per bushel below that paid for red wheats. The importance of a very small increase in the productive power or the market value of a variety of wheat will be realized when it is remembered that the wheat crop of Ohio for 1878 was nearly thirty-five and a quarter million bushels from two and one-eighth million acres of land, an average of sixteen and a half bushels per acre. An increase in productiveness of half a bushel per acre would add more than one million bushels to the total crop, while an advance of five cents per bushel in the market value of the whole would amount to a total of a million and three-quarters of dollars.

(2). *Methods of culture*—

(*a*). THE EFFECT OF LATE PLOWING FOR WHEAT.

About the first of August, 1879, a portion of a field of oat stubble, containing an acre of land, was plowed and the surface pulverized with the smoothing harrow. Nothing further was done until the 23d of September, when the land adjoining was plowed and the whole thoroughly pulverized and sown with Arnold's Gold Medal wheat on the 26th of September.

The wheat sown on the earlier plowed strip, germinated promptly and grew finely; but that on the later plowing did not make its appearance for several days after the other, and then grew so much more slowly that the division between the two plowings could be distinctly seen until harvest.

In March the whole was sown with clover-seed, but, while that on the earlier plowing made a fair catch, that on the later was almost a total failure.

We harvested 24¾ bushels per acre of nice, plump grain from the earlier plowing, and 14⅜ bushels, badly shrunken, from the later.

(*b*). EARLY AND LATE SOWING OF WHEAT.

In the wheat crop of 1879 we commenced a series of experiments designed to ascertain the proper time for sowing wheat in this neighborhood. Five sowings were made on bottom land; one each on the 9th, 16th, 23d, and 30th of September, and 7th of October, in plots two rods wide by 40 long, containing one-half acre each. The variety of wheat used was Clawson, and it was sown at the rate of six pecks per acre. The result was as follows:

That sown	September	9th,	yielded	$33\frac{2}{10}$	bushels	per acre.
"	"	16th,	"	$30\frac{3}{10}$	"	"
"	"	23d,	"	$36\frac{4}{10}$	"	"
"	"	30th,	"	$32\frac{7}{10}$	"	"
"	October	7th,	"	$26\frac{2}{10}$	"	"

The first two sowings were perceptibly injured by the fly.

These experiments were continued in the crop of 1880 by making ten sowings on the same dates as those of 1879, two strips being sown on different portions of the

field on each date, the strips being 1¼ rods wide by 39 rods long, and containing one-third acre each. The soil selected this time was upland, with a westerly exposure. The variety of grain used was Silver Chaff, sown at the rate of six pecks per acre. The result was as follows:

That sown	September	9th,	yielded	32½	bushels	per acre.
"	"	16th,	"	33	"	"
"	"	23d,	"	33½	"	"
"	"	30th,	"	29½	"	"
"	October	7th,	"	26¼	"	"

In this case we found no indication of the fly.

(c). THICK AND THIN SOWING OF WHEAT.

In the fall of 1877, a portion of a field of bottom land which had been put in the most thorough condition by early plowing and repeated harrowings, was divided into plots of equal size and of as nearly as possible equal fertility, and sown at the rate of 3, 5, 6, 7, 8 and 9 pecks per acre. The result was as follows:

3	pecks	seed	yielded at the rate of	32¼	bushels	per acre.
5	"	"	"	33¾	"	"
6	"	"	"	35⅝	"	"
7	"	"	"	37½	"	"
8	"	"	"	37½	"	"
9	"	"	"	31½	"	"

The following season the experiment was repeated in the same field and with the same preparation of soil and seed. The number of plots was increased, however, to five for each quantity of seed; the plots being so distributed as to counter-balance, so far as possible, any irregularities of soil. The result was as follows:

2½	pecks	seed	yielded	$27\frac{3}{10}$	to	$31\frac{3}{10}$	bushels per acre, average	$29\frac{6}{10}$
3	"	"	"	$29\frac{1}{10}$	to	$31\frac{2}{10}$	" " "	$30\frac{5}{10}$
4	"	"	"	$31\frac{5}{10}$	to	$36\frac{6}{10}$	" " "	$34\frac{2}{10}$
5½	"	"	"	$32\frac{8}{10}$	to	$37\frac{5}{10}$	" " "	$34\frac{9}{10}$
7	"	"	"	$33\frac{1}{10}$	to	$40\frac{3}{10}$	" " "	$35\frac{9}{10}$
9	"	"	"	$32\frac{5}{10}$	to	$35\frac{6}{10}$	" " "	$34\frac{2}{10}$

Seven pecks of seed, therefore, gave us four and one-half bushels additional crop in 1878, and five and one-half bushels in 1879, over what we obtained from sowing three pecks only. In both cases the seed was drilled, the variety being Clawson.

(d). SPRING CULTIVATION OF WHEAT.

The experiment of sowing in drills double the ordinary distance apart, and of cultivating the interspaces in the spring, was repeated this season for the third time, with Gold Medal wheat sown on very thin land; the sowing and cultivation being done with the "Groff" attachments invented for the purpose. The cultivated wheat yielded at the rate of sixteen bushels per acre, that adjoining, not cultivated, at the rate of nineteen bushels, a result in accordance with our previous experiments.

CORN CULTURE.

1. *Varieties.*—We have grown over three seasons a distinctly marked variety of yellow corn, known as the "Leaming," or "Clinton" corn, originated by Christopher Leaming, of Clinton county. We value this variety especially for its earliness and productiveness, while the ease with which it is husked, and its beautiful, golden color, are further desirable qualities.

We have grown one crop of a variety called, in Harrison county, the "Porter" corn. It is somewhat later than the Clinton in ripening, and seems to have a slightly larger proportion of cob to grain, but it is productive, and beautiful in appearance, and would seem to be specially adapted to the bottoms of the Scioto and Miami.

Last spring we received, through the kindness of Claude V. Burke, Esq., of Yolo, California, a few kernels of the "Cuzco" corn, a variety grown by the Cuzco Indians, in the Andes mountains, and forming a large portion of their food. The kernels are as large as Lima beans, and are surrounded by such a thin bran that they are prepared for the table by simply boiling them. Part of the seed was started in sods in the hot-bed, and all was planted in the open air in May. The corn grew luxuriantly, but never formed a kernel.

2. *Methods of Culture*—The experiment of deep plowing for corn was repeated in a field which has been in corn for three successive seasons, without manure; three strips, containing nearly two acres each, being plowed to the depth of eleven inches with a double plow, and two strips of the same size, and alternating with those deep-plowed, being turned to the depth of eight inches. Each of the above strips contained two shock rows, of twenty shocks each, the corn being planted at the rate of twenty-one and one-half shocks per acre. The results of this experiment are tabulated below:

1st shock-row,	deep-plowed,	yielded	63.64	bush.	grain, and	3,375	lbs.	fodder per acre.
2d	"	"	62.35	"		3,257	"	"
3d	"	shallow-plowed, "	57.19	"		2,881	"	"
4th	"	"	62.34	"		3,069	"	"
5th	"	deep-plowed, "	60.13	"		3,252	"	"
6th	"	"	66.00	"		3,354	"	"
7th	"	"	60.63	"		3,139	"	"
8th	"	"	60.41	"		3,053	"	"
9th	"	shallow-plowed,"	53.32	"		2.676	"	"
10th	"	"	53.68	"		2,870	"	"
Av. yield for	deep-plowing,	"	62.19	"		3,237	"	"
"	shal.-plowing,	"	56.63	"		2,874	"	"
Incr. yield for	deep-plowing,	"	5.56	"		363	"	"

The value of this increased yield is, at this year's prices in this vicinity, $1.83 for the grain, and 62 cents for the fodder; total, $2.45. The soil upon which this experiment was made is alluvial, naturally under-drained, and largely formed from the Huron shale.

POTATO CULTURE.

Early Vermont and early Rose potatoes were planted side by side, and received, as nearly as possible, the same care. The Vermonts were ready for use several days

sooner than the Roses, and yielded at the rate of 135 bushels per acre, while the Roses yielded at the rate of 127 bushels.

For two seasons we have used London Purple exclusively for poisoning the potato bug, and consider it quite as satisfactory as Paris Green.

The farm is indebted to Mr. S. H. Fox, of St. Louis, Missouri, for an apparatus for applying the poison in water. The apparatus was received too late for this season's operations, but, from its construction, I believe it will prove well-adapted for the purpose. It divides the liquid into a perfect spray, thus preventing the excessive waste of the poison, which seems unavoidable in other methods of water-poisoning.

SOME COMMERCIAL AND OTHER FERTILIZERS ON POTATOES.

The following fertilizers were applied in the row at the planting of a plot of Early Rose potatoes, on the 17th of April, viz.: sulphate of potash, at the rate of 100 pounds per acre; "tankage", made by the Cleveland Provision Co., at the rate of 200 pds. per acre; common salt, at the rate of 200 pds. per acre; wheat bran, at the rate of 1,000 pounds per acre; corn-cob ashes, at the rate of 100 pounds per acre, and well-rotted barn-yard manure, at the rate of five cords per acre. These fertilizers were applied to alternate rows, either singly or in the combinations indicated below, and all, except the yard manure, were scattered directly upon the potatoes. The manure was applied after the potatoes had been partially covered with earth. The following diagram shows the combinations in which the fertilizers were applied, the cost of the application, the rate of yield of the crop, and the increased yield that was apparently due to the fertilizers, with its value:

No. of plot.	Fertilizer.	Cost of application.	Yield per acre.	Increase per acre.	Value of increase.
I	None	.....	88.7 bu.	.....	.....
II	Yard manure	$5 00	99.6 "	10.9 bu.	$5 45
III	Bran	7 00	108.4 "	19.7 "	9 85
IV	Potash, tankage and salt	7 90	104.1 "	15.4 "	7 70
V	Tankage and salt	4 30	93.7 "	5. "	2 50
VI	Potash and salt	3 60	106.8 "	18.1 "	9 05
VII	Potash and tankage	7 00	108.7 "	20. "	10 00
VIII	Yard manure and salt	5 60	95.5 "	6.8 "	3 40
IX	Yard manure and tankage	9 00	109.1 "	20.4 "	10 20
X	Yard manure and cob ashes	7 00	122.8 "	34.1 "	17 05

It has been stated above, that the ash of corn-cobs was one of the fertilizers used in this experiment. This ash, when pure, should contain 52 per cent. of potash, and it was used in the place of the sulphate of potash on a duplicated series of plots, in order to compare its effect with that of the commercial sulphate. The plots fertilized with sulphate of potash yielded at the rate of 100.9 bushels per acre; those upon which the cob-ash was used instead, yielded at the rate of 117.9 bushels per acre. The sulphate of potash used, contained about 38 per cent. of actual potash; hence, we may conclude that the potash in the cob-ash is quite as available as plant-food as that in the sulphate, and that, if the latter is worth $55.00 per ton, (the rate paid for this lot), then the ash would be worth about $70.00. Evidently

this question should be more fully investigated, as large quantities of this ash are yearly being made by the corn-shipping warehouses of the West, whose engines are chiefly, if not altogether, fed upon corn-cobs.

The object aimed at in the use of bran as a fertilizer was two-fold; first, to test its availability as a conveyer to the growing crop of the nitrogen, potash and phosphoric acid, which are among its chief constituents, and next, to inquire into its feeding value. Apparently there is occasion for further investigation of these questions, for if the raw bran is worth as much as a fertilizer, as this experiment would seem to indicate, it may well be used liberally as a feeding stuff; since its passage through the animal organism must add to, far more than it takes from its manurial value.

Salt was apparently a detriment to the crop, to the extent of from three to six bushels per acre, except, possibly, when used with potash alone, as shown by comparing the yields of plots VIII with II, and IV with VII. If we accept this supposition, we shall find an increase due to the tankage of ten bushels per acre, as shown by comparing plots IX with II, and V with I. This would give about the same value for potash, as shown by the yields of plots IV, VII, and III, the amount of bran used containing about one-third the quantity of potash, and nearly twice as much phosphoric-acid, as the applications to plots IV and VII, with the addition of 22 lbs. nitrogen. In plot X the cob-ash was added at the rate of 200 instead of 100 lbs. per acre, thus giving three times the amount of potash that was given to the other plots. The yield of this plot would indicate that the limit of the profitable use of this fertilizer had not yet been reached.

The tankage used consisted of dried blood and other refuse of the slaughter-house, and contained 7.42 per cent. of nitrogen, and 8 per cent. of phosphoric acid, as shown by the analysis of Prof. N. W. Lord. It was used in this experiment as a source of phosphoric acid.

FORAGE CROPS.

Experiments have been made with German millet, with common field corn, and with rye, as secondary forage crops, with the following results:

(*a*) An acre of land from which we had just harvested a crop of wheat, was plowed and sown with German millet, on the 21st of July. On the 21st of September the crop was cut, yielding 2500 lbs. of good hay.

(*b*) Two acres which had been in rye were plowed and sown with common field corn, on the 30th of July, in rows 28 inches apart. No cultivation was given, the rapid growth of the corn during August shading the ground so that there were but few weeds. The yield was at the rate of 3600 lbs. of cured fodder per acre.

(*c*) A seventeen-acre corn-field was sown with rye, about the middle of August, 1879, at the rate of a bushel-and-a-half per acre. As soon as the corn could be husked, a portion of the fodder was removed and stacked, and the part of the field thus cleared was inclosed with a portable fence. Twenty cows were then allowed to graze the rye, and as fast as it was eaten off the range was enlarged by moving back the portable fence. The cows were kept off in wet weather, but the field furnished their pasture ground for six weeks during the fall, and six more during the spring, when two acres of the seventeen were still untouched. The pastured portion of the field was plowed early in May, and planted with corn, which has yielded at the rate of

seventy-three bushels of shelled corn per acre. The extra flow of milk obtained from the rye would fully balance the cost of seeding and care, so that we have had the chief support of twenty cows for three months, as the net product of the rye, or at least six dollars per acre, while the succeeding corn crop has been benefited, rather than otherwise, by the intermediate rye crop, as shown by its yield.

As has been stated, these crops were grown as secondary crops, the millet and corn occupying the space between two crops of wheat, or between a wheat and a spring crop, and the rye that between two crops of corn. Our experience shows that the income of the farm may be very largely increased, temporarily at least, by such management. The question of its effect upon the land is an important one, and one which time alone can decide. The probability is, however, that this effect will be favorable rather than otherwise, by enabling the farmer to keep more stock, and thus make more manure, while the exhaustion of the soil by these green crops which form no seed must be a slow process, certainly not a more speedy one than that of allowing the fields to be occupied with such a growth of pernicious weeds as is generally seen on our stubble-fields in August, and too often on our corn fields.

(*d*). A small quantity of the southern Cow-peas was sown in the Spring. They made a rank growth, and matured some seed, but they require the whole season for their growth, and will probably not be found so profitable here as some of the leguminous plants that are better adapted to a northern climate.

(*e*). We received a bushel of seed of the "Desmodium Molle" from the Agricultural Department at Washington. This is a leguminous plant, which is being used to recuperate the worn-out soils of some of the southern States; the seed was carefully sown, but failed to germinate.

(*f*). We have made a partial test of Dhoura, Egyptian, or Rice-corn—a plant which is attracting considerable attention in California and Kansas, on account of its ability to resist drouth—with results which justify a further trial. This plant is cultivated both for its seeds and its fodder; the seed grows after the manner of common sorghum, broom corn, etc., except that the head is very dense, and turns downward, forming a perfect shepherd's crook. One of the striking peculiarities of the plant is its habit of sending off branches or suckers, both from the root and from the upper nodes, during the latter part of summer. In southern latitudes the upper branches produce a second crop of seed, ripening about a month later than the main crop; with us this habit is only valuable in that it gives an abundant mass of forage, which is fresh, and at its best at the same time that the seed is ready to harvest.

It is claimed that this plant will produce as much grain to the acre in ordinary seasons as Indian corn, and that it produces fair crops during seasons of drouth which are fatal to the corn crop. Our experience apparently confirms the first part of this claim. In feeding quality the grain of Dhoura is shown to be fully equal to that of corn, by chemical analysis made at the University of Kansas. For this fact I am indebted to the excellent report of the experimental work of the Agricultural Department of the University of Tennessee, by Prof. J. M. McBryde. While the Dhoura will never take the place of maize in the Agriculture of Ohio, I expect it to prove a valuable supplementary crop for certain purposes.

GRASSES.

An experiment has been instituted with the design of comparing Orchard grass, English Blue grass, and Perennial Rye grass. No results can be given until after another season's growth.

CLOVER.

We have had serious difficulty in securing a catch of clover, owing to drouths in April and May. We this year harrowed in all our clover-seed with a fine-toothed spike harrow. While we are not able to say positively that the harrowing was a benefit to the clover or the wheat, we can say that it was certainly no disadvantage to the former, and apparently none to the latter, and that we shall certainly repeat the operation in future seedings.

THOROUGH DRAINAGE.

An attempt has been made to compare the effects of thorough with partial drainage. Four lines of three-inch tile were laid in one of the wettest fields of the farm, the drains being in two pairs, two rods apart in the pairs, with a space of five rods between the inside drains of the pairs. No results can yet be given, as the drains were made too late to be of material benefit to the crop of this year.

SORGHUM CULTURE AND MANUFACTURE.

Two varieties of sorghum were grown this season, the "Minnesota Early Amber," and "Hedges Early Orange." The Amber yielded at the rate of 80 gallons of syrup per acre, the Orange at the rate of 120 gallons. This difference in yield is hardly a just measure of the difference between the varieties, however, as both were planted the same distance apart (3½ by 3½ feet), while the Amber, on account of its smaller habit of growth, should have been planted not further apart than 2 by 3 feet. Both varieties yielded syrup of uniformly excellent quality; that of the Orange cane, however, contained a large quantity of lime, which remained in suspension in the syrup, instead of adhering to the bottom of the pan.

A portion of the juice from each of these canes was clarified with lime, and the lime afterward neutralized with sulphurous acid, a process which uniformly resulted in darkening the syrup, although it increased the proportion of cane-sugar, as shown by the following analysis of syrups from the Orange cane, kindly made by Prof. N. W. Lord, State Analyst.

Sample 1, clarified, gave 40.9 per cent. grape-sugar, and 29.7 per cent. cane-sugar.

Sample 2, unclarified, gave 44.0 per cent. grape-sugar, and 26.1 per cent. cane-sugar.

C. E. THORNE, *Farm Manager.*

RECORD OF PROCEEDINGS

OF THE BOARD OF TRUSTEES OF OHIO STATE UNIVERSITY.

COLUMBUS, OHIO, *January* 8, 1880.

Board met pursuant to adjournment at 9 o'clock A. M.

Present—Messrs. Anderson, S. H. Ellis, Godfrey, Jamison and Johnston.

Executive Committee made report of proceedings to date.

The *President made report of all conveyances of Virginia Military lands* conveyed by him since November 15, 1879.

The Secretary *reported* the *purchase* of *books* ordered, viz.: "American Jersey Cattle Club Register," and "North Americans of Antiquity."

Prof. McFarland was instructed to delay the *purchase* of *lithographic stone* to display farm divisions, etc., until they were more definitely arranged.

In consequence of clerical omission to insert in June, 1879, minutes, the *appropriation* of $150 *for student helps in the Chemical Department*, it was

Ordered, That $150 be now appropriated.

Mayor Collins and Mr. Frambes appeared before the Board in relation to the *extension* of *Neil Avenue Street Railway* to the north line of the College grounds, or, at least, to a point opposite the University buildings on the west side.

After consideration, the whole subject was referred to the Executive Committee and President of the Board.

Messrs. Godfrey and Johnston made report on the *claim* of *W. H. Leete*, and asked to be continued until the Secretary could obtain information from Mr. Leete concerning certain notes, amounting to $71.75, reported to have been paid him while Agent of the College.

Ordered, That $40 *be appropriated for assistant in Mathematical Department.*

Moved, That Prof. Robinson be allowed to expend a sum not *exceeding* $50 *for supplies* for the *Physical Department* during the remainder of this collegiate year, and that a sum not exceeding *one hundred dollars* ($100) be allowed for the same time to be expended by Prof. Norton for *supplies* for the *Chemical Department.*

Carried.

On motion, the degree of *Mining Engineer* was conferred on *Robert S. Towne.*

The *bill of J. T. Harris*, Architect, for $227.50, was allowed, and payment ordered.

A *final settlement with Clarke & Fahey*, contractors for the building of the Mechanical Laboratory, was referred to the action of the Executive Committee, at their discretion.

A proposition was received from Thomas Mathew looking to the purchase of apparatus in the Department of Drawing for the sum of $439.50, whereupon it was

Resolved, That the proposition of Prof. Mathew to sell his apparatus now in his department, be held for consideration, and that one hundred dollars ($100) be allowed him for the use of said apparatus, from the time it was placed in the University, to the close of the present college year, and that in case the Board hereafter buys said apparatus, that then the $100 hereby allowed be deducted from the purchase price to be paid.

Ordered, That the amount of twenty-six dollars and eighty-five cents ($26.85), paid by *Dr Townshend*, for the purchase of a *Veterinary Model* (horse's foot), be paid back to him.

Resolved, That President Orton be directed to make an annual subscription for the following journals, viz.: American Journal of Science, Van Nostrand's Engineering Journal, Scientific American, Nature, Journal of Chemical Society and North American Review.

The President of the Board was requested to correspond with Hon. George L. Converse, concerning the military claims of Ohio against the United States.

Captain C. A. Barton, to whom was referred the request of Mr. Kendrick, concerning the withdrawal of certain caveats, made report, whereupon the following was adopted:

WHEREAS, Captain C. A. Barton has recommended the withdrawal of the caveats filed in the general land office of the United States, against the issuing of patents for the within (34) described surveys within the Virginia Military District; therefore,

Resolved, That the Board does hereby withdraw said caveats, and authorizes the Secretary of this Board to certify the same to the Commissioner of the General Land Office for his action, accordingly.

On motion, the Board adjourned to meet at the call of the President.

COLUMBUS, O., *February* 3, 1880.

No quorum of the Board was had on February 2, at 8 o'clock, P.M., and the Board met at 9 o'clock to-day.

Present—Messrs. Jamison, Johnston, Godfrey, Anderson, and Alston Ellis.

The minutes of the previous meeting were read and approved. The report of the Executive Committee was read and approved.

On motion, it was

Resolved, That Attorney-General Nash be requested to take charge of all cases of litigation now pending between the Board of Trustees and other parties, and that the Secretary be requested to notify him of this action.

The Executive Committee having declined to take definite action in the matter of granting the *Consolidated Street Railroad Company* the privilege of extending their track into the University grounds, the Board decided to postpone further consideration therof until their next meeting.

On motion, the question of opening up *Woodruff Avenue* from High street to the river, and a change of the *water-drainage* on High street, was referred to the Executive Committee and President of the Board.

The following proposition was presented by C. A Barton, and approved by the Board:

To SMITH GRIMES, *Esq.*:

To effect a compromise and to avoid litigation, as the Agent of the Ohio State University, (subject to the approval of the Trustees of said University), I propose to sell and convey to you the whole of lots Nos. 131, 132, and 123, as made by the Agricultural and Mechanical College, excepting 50 acres heretofore sold by contract to Mr. Kisling, and 40 acres claimed by Nancy Wason, as a homestead, for the sum of *three hundred and seventy-five dollars* ($375.00). You to relinquish by deed all claims on this 50 and 40 acres to said parties, respectively.

Dated this 2d day of December, 1879.

(Signed) CHAS. A. BARTON, *Agent*
Ohio State University Lands.

On motion, the Secretary was instructed to pay W. H. Leete, $28.25, balance due on account of legal services, as per bill rendered, of $303.00, after deducting $25.00, amount of Shively, note and $21.75, amount of Reno note, and should it appear by Leete's old account that these notes have been accounted for by said Leete, these amounts are to be refunded to him.

Reports concerning improvements to college campus, and as Bursar for the first term of current year, were presented by Prof. McFarland, and approved.

The account of Attorney-General Pillars, for legal services, was referred to the President of the Board, with instructions to confer concerning the same with the present Attorney-General.

On motion, it was

Resolved, That the Secretary be instructed to accept the policies of insurance, presented by John Rea, on the Mechanical Laboratory and boiler-house for $7,500, and that he take $2,500 more on the same buildings, in good companies, represented by Zelotes Wood.

The settlement of the old account of George Weinman, deceased, for repairs to boilers and for an unfinished engine, ordered by a previous Board, of said Weinman, was referred to the Executive Committee, with power to act.

A request was made by Prof. Tuttle, for a leave of absence without pay for one year, to perfect certain studies connected with his department in the University.

The granting of said request was deemed inadvisable.

After conference in relation to the management of the farm, which the Board had examined on the 4th (to-day), the Board adjourned, subject to the call of the President.

COLUMBUS, O., *February* 25, 1880.

Board met at 8 o'clock at the Neil House. The following members were present: Messrs. Godfrey, Jamison, A. Ellis, S. H. Ellis, and Stephen Johnston.

The minutes were read and approved.

Discussion concerning the propriety of asking the Legislature to repeal the law making *Military Drill* in the University optional, was had. Further consideration of the subject was postponed.

The following preamble and resolution was adopted.

WHEREAS, A resolution and bill is now under consideration in the General Assembly of Ohio, proposing to grant the Ohio State University all claims of the State of Ohio against the General Government, on account of the 5 *per centum* due to the State for land warrants located by the State;

Therefore, resolved, That the chairman of this Board be and is hereby authorized to appoint an agent or agents, and to take other necessary steps for the collection of said dues, whenever the General Assembly of Ohio shall determine to grant the said claim to the University.

Communications from Attorney-General Nash and other able lawyers, touching the legality of Ex-Attorney Pillars' account for legal services rendered the University, were read, whereupon the Board ordered the account of General Pillars to be paid.

Capt. Barton was authorized to arrange with S. Kendrick for the survey and sale of a certain piece of land, of 300 or 400 acres, discovered and reported by him, under the terms of a proposition submitted to the Board by said Kendrick at a previous meeting.

The matter of extending into the College grounds the line of the *Consolidated Street Railroad* was laid on the table.

The claim of Attorney Billings, of Adams county, for legal services and costs paid in the case of W. J. McKinney, et al, amounting to $50.00, was allowed and ordered paid.

The following preamble and resolution was adopted, viz.:

WHEREAS, *Prof. T. C. Mendenhall*, who held the chair of Physics and Mechanics in this Institution from its opening until June, 1878, with great credit to himself, and with equal advantage to the University, did at that date resign his position to accept the very honorable and responsible appointment of Professor of Physics in the Imperial University of Japan; and

WHEREAS, The Board of Trustees now learns with great satisfaction that Professor Mendenhall is willing to return to his former field of labor, upon the expiration of the two years covered by his original agreement with the Japanese Government, and such additional time as he deems necessary for the giving of a fair and honorable notice of withdrawal from the institution in which he has been treated so considerately; it is therefore

Resolved, That Prof. T. C. Mendenhall is hereby appointed to the professorship of Physics in the Ohio State University, and that his term of service shall begin with the college year, that opens September, 1881.

Ordered, That James B. Jamison be and is hereby authorized to draw an order upon the Treasurer of the Ohio State University for an amount of not exceeding four hundred dollars ($400), to pay to C. E. Thorne for money expended in improvements and repairs made upon the University farm.

Ordered, That the Secretary of this Board be and is hereby authorized to draw his warrant upon the Auditor of State, payable to the Treasurer of the University, for the sum of five thousand one hundred and fifty dollars and ninety cents ($5,150.90), appropriated by the 64th General Assembly to reimburse the Ohio State University for moneys expended inpaying the reasonable and necessary expenses of the Trustees, while engaged in the discharge of their official duties.

Board adjourned.

COLUMBUS, *April* 20, 1880.

A called meeting of the Board of Trustees was held this day at the University. Present, Messrs. Johnston, Godfrey, Jamison, and Anderson.

After inspecting the grounds, it was

Resolved, That the Board approve of opening Woodruff avenue on the north side

of the College grounds, from High street to the centre of the Olentangy river, and that the President of the Board be and is hereby empowered to take necessary steps for the accomplishment of the same.

On application of Prof. Norton, it was

Ordered, That he be instructed to purchase in Europe the necessary chemicals for the supply of the Chemical Department for the next year, to an amount not exceeding $600 in cost, delivered here.

Ordered, That bills for the drainage of the President's house, amounting to $25.32 be allowed.

Ordered, That ten dollars ($10.00) be allowed for the purchase of fossils, from Rev. Mr. Stidham, to be placed in Geological room.

Ordered, That the Secretary be and is hereby authorized to draw his warrant on the Auditor of State for any and all moneys appropriated by the 64th General Assembly for the Ohio State University, wherever the accounts and bills chargeable to the several appropriations have been approved, as follows: "For farm improvements and stock," by Chairman of Farm Committee; "for wall and table cases of Geological Museum, and supplies for Mining Department," by Executive Committee, and "for expenses of Trustees," by President of the Board.

The Secretary reported the appropriation made April, 1880, to be, "for farm improvement and stock, $1,500"; "for wall and table cases, $1,000"; "for supplies for Mining Department, $500", and "for expenses for Trustees, $350."

Ordered, That the amount appropriated for wall and table cases in the Geological Museum be expended under the direction of the President of the Faculty and the Secretary of the Board.

The Bursar's report of term fees collected was read and approved.

Ordered, That the Farm Committee be and are hereby authorized to expend, according to their discretion, the $1,500 appropriated for farm improvement and stock.

The Secretary was instructed to prepare in book form a complete detailed statement of the Virginia Military Lands, showing the number of lots, number of acres belonging to each lot, the appraised value per acre, and if sold since Nov. 15, 1878, to whom, and at what price. Also, of the number and amount of all notes in the hands of the Treasurer, and when payable. Said book to be kept for reference and further entry as may be demanded.

Resolved, That Prof. McFarland be and is hereby authorized to take exclusive control of college campus, and all grounds inclosed within the fence bounding the same; and that he employ a man at a compensation not exceeding $35.00 per month, to be under his supervision, to work upon the same, and act as lawn-keeper.

Passed.

On motion, the following preambles and resolutions were adopted:

WHEREAS, In the judgment of the Faculty of this Institution, as expressed in the following scheme, it is deemed practicable and desirable to establish a closer connection between the University and the High Schools of this State; and

WHEREAS, The Board of Trustees looks with special interest to such a result; therefore, be it

Resolved, first, That graduates of High Schools in cities of this State, whose population equaled or exceeded 5,000 at the last census (1870) shall be admitted to Freshman standing in the various courses of the College; provided, that in cases where the course of study, pursued by such a graduate, does not include all the studies required as preparatory to the course elected, such student shall be required to pass examination in any or all such studies as are not included.

Second, That graduates of such other High schools of the State as are found, upon examination by the Faculty, to maintain a course of study sufficiently extended and thorough, to insure the needful preparation, shall in like manner be admitted to College standing.

Board adjourned.

COLUMBUS, OHIO, *June* 17, 1880.

In pursuance of call, the Board met at 8 o'clock A. M.

Present—Messrs. Johnston, Jamison, Miller, S. H. Ellis and Alston Ellis.

The minutes of the previous meeting were read and approved.

The President of the University made report of the condition and wants of the various departments, when the following appropriations were ordered for the ensuing college year:

For the Physiological Laboratory	$100 00
" Agricultural Department (models, etc)	1,000 00
" Mechanical Department	300 00
" Chemical Department (chemicals, etc)	300 00
" Library	500 00

For student helps, the following were ordered, viz.:

For Department of Physics (per annum)	$200 00
" Chemistry	200 00
" Mathematics	100 00
" Latin and Greek, subject to the distribution of the President and Professor	300 00
For clerical work in President's office	75 00
For mechanical work in Laboratory	25 00
For Librarian (Miss S. Glover)	125 00

On motion,

Resolved, That the present Faculty of the Ohio State University, with the exception of Thomas Mathew, be continued for one year, and that the salaries of Professors Smith, Short and Lord, and Miss Alice Williams, be increased one hundred dollars each per annum.

Ordered, That the bill of Leo. Weltz, to the amount of $100, be paid.

Ordered, That $400 to be drawn by the Farm Committee from the appropriation for farm improvement and stock.

Ordered, That $100 be advanced to the Farm Committee, to be used for current expenses.

After a full consultation with the President and Professor Lomia, the following resolution was offered by S. H. Ellis:

Resolved, That military drill, from and after the beginning of the next college year, be made compulsory upon all male students connected with the University for the first two consecutive years of their course, with the exception of those physically unfitted for such drill, and such as may be excused by the President on reasonable grounds.

Mr. Alston Ellis offered the following substitute:

Resolved, That the military drill, from and after the beginning of the next college year, be made compulsory upon all male students connected with the University, with the exception of those physically unfitted for such drill, such as may be excused by the President of the Faculty, upon reasonable grounds, and the regular members of the Junior and Senior classes.

Passed.

The report of the Bursar for the spring term was made and accepted. Also, the Report of the Superintendent of the College Campus.

Ordered, That the bill of Attorney Billings, of Adams county, for fees in the case of the Ohio State University against Samuel Cooper et al., amounting to $35.00, be allowed for payment.

Resolved, That Dr. Townshend be given the privilege of visiting various institutions in the United States and Canada, where instruction in agriculture is given, and that a sum not to exceed $50.00 be appropriated towards paying in part the expenses of such visit.

Mr. —— Underwood appeared before the Board, and stated that he had discovered lands in Franklin county belonging to the University, whereupon the Board authorized the Secretary to enter into contract with said Underwood for the survey, appraisal and sale of said lands, on the same terms as was agreed upon in the contract with W. E. Orr and W. H. Gaber. Recorded on page 53 of this Minute Book.

The Executive Committee was instructed to make such repairs and improvements to the dormitory as they should deem best.

Captain C. A. Barton presented a report of his agency in the management of the Virginia Military lands since November 15, 1879. Whereupon his salary, amounting to $420, and bill of expenses, including costs of suits in Pike county, amounting to $695.37, were ordered to be paid.

Ordered, That the sum of $200 be and is hereby appropriated for advertising, to be expended under the direction of the President of the Board and the President of the University.

Ordered, That the salary of Professor N. E. Lord, for the coming college year, be paid as follows, viz.: Six hundred dollars ($600.00) from the State appropriation for analysis required by State law, and the balance from the interest fund of the University.

On motion, a recess of the Board was taken until June 22d, at 2 o'clock P. M., at which time all the members of the Board, except S. H. Ellis, were present.

Upon the recommendation of the Faculty, the following degrees were conferred, viz.:

Bachelor of Arts—Edwin E. Corwin, Franklin county.
" " Arthur Cunningham, Franklin county.
" " John Paul Jones, Franklin county.
" " Florizel Smith, Fairfield county.
" " John C. Ward, Lake county.
" " Alice M. Townshend, Lorain county.

Bachelor of Science—Sidney H. Short, Franklin county.

Mining Engineer (M. E.)—Hiram D. Gregory, Scioto county.

Mechanical (Mech. Eng.)—John H. McCormick, Franklin county.

Certificate of Proficiency—To Miss Katharine A. Mathews, in English language and literature, German language and literature, French language and literature, and Free-hand drawing.

Judge Harrison appeared before the Board, and presented the claim of F. M. Beebe for reimbursement in the sum of $409.10, expended in connection with his purchase of Virginia Military Lands, whereupon it was

Resolved, That the claim of F. M. Beebe be referred to Messrs. Johnston and Godfrey, (members of the Board) with full power to act.

Resolved, That President Orton, with the resident members of the Executive Committee, be empowered to distribute the fund appropriated for the library.

Ordered, That the sum of $25.00 be and is hereby appropriated for the college band, to be expended under the direction of Lieut. Lomia.

A recess of the Board was had until

8½ O'CLOCK A.M., *June* 23, 1880.

Board met: Present, all the members except S. H. Ellis.

On motion, it was

Ordered, That in pursuance of section 8433, Revised Statutes of Ohio, the treasurer be and is hereby instructed to certify into the Treasury of State, to be placed to the credit of the irreducible fund of the University, twelve thousand and seventy-three dollars and twenty-eight cents, ($12,073.28) being the net proceeds derived from the sale of the Virginia Military Lands, as shown by his statement of said account, November 15, 1879, page 85 of the ninth annual report of the Ohio State University.

Professor McFarland was directed to purchase an equatorial telescope for his department at a cost not to exceed $450.00.

On motion of Mr. Godfrey, it was

Resolved, That the west end of the field adjoining the college building on the east, and extending as far east as the bend in the fence, on the north side of the main drive, be made a part of the Campus, and be placed under the control of Prof. McFarland, as soon as the growing crop is removed.

After a full discussion of the present condition of the department of Free-hand and Mechanical Drawing, on motion of Mr. Godfrey, it was

Resolved, That the department of Free-hand and Mechanical Drawing be and is hereby abolished, and that in lieu thereof, there is hereby established the department of Art.

On motion, it was

Resolved, That the employment of Instructor or Instructors in this department be referred to the President of the Faculty, Secretary of the Board and resident members of the Executive Committee, to be reported for the future action of the Board of Trustees.

Mr. C. E. Thorne, Farm Manager, appeared before the Board, and presented verbal resignation of his position, to take effect April 1, 1880, unless his salary should be raised to $1,000 per annum. The Secretary was instructed to notify Mr. Thorne that the Board declined to accede to his terms, and accepted his resignation to take effect April 1, 1880.

A recess by the Board was taken to attend, during the afternoon, the Commencement Exercises of the University. After which, upon re-assembling, consideration of the Farm Management was engaged in, and it was

Resolved, That Prof. Townshend be reinstated as Farm Superintendent, in connection with his duties as Professor of Agriculture.

On motion,

Ordered, That Albert Allen, Secretary of this Board, be allowed $300 for extra services, for making a full and accurate record of the Virginia Military Lands belonging to the Ohio State University; and in payment of special service in connection with the collection of outstanding notes due from purchasers of certain portions of said lands to said University.

Ordered, That the Executive Committee be empowered to furnish such additional facilities for Laboratory work in the Chemical Department as the exigencies of the case seem to require, at the opening of the fall term of the University.

The Secretary was authorized to notify the Lyonsdale Coal Company, that any balance of coal not delivered under the contract with the University, would be accepted next winter, if they desired it.

A communication from the Janitor, concerning the extension of certain steam pipes into the Society rooms, and the laying of gas-pipes to the boiler and gas-house, were referred to the Secretary, with power to act.

Board adjourned, subject to call of the President.

COLUMBUS, OHIO, *August* 31, 1880.

Board met at call of President.

Present Messrs. Johnston, Jamison, S. H. Ellis, Godfrey, Miller and Anderson.

Minutes read and approved.

Messrs. Johnston and Godfrey, to whom was referred the claim of F. N. Beebe, reported adverse to said claim, and it was ordered that action be brought against said Beebe on his note, now past due and unpaid.

By request, Prof. Thompson, of Perdue University, Indiana, read a paper relating to the proper organization of the Art Department.

Dr. Townshend read a report of his observations while visiting Agricultural Colleges in other States and in Canada, and submitted recommendations as to the management of the Agricultural Deparment in the Ohio State University.

A committee from the Horton Society was heard on an application for an appropriation of $55, with which to buy chandeliers for the society hall.

Ordered, That two copies of the Ohio Farmer be ordered for the University and use of the Farm Committee.

Board took a recess until to-morrow, at 8 o'clock A. M.

WEDNESDAY, *September* 1, 1880.

Board met at 8 o'clock A. M. Present—Messrs. Johnston, S. H. Ellis, Jamison and Godfrey.

The Secretary presented the following sealed proposals for supplying from 500 to 800 tons of coal at the Ohio State University, in quantities as needed, during the collegiate year:

J. S. Doe & Co., per ton	$2 35
T. Longstreth, "	2 50
M. A. Suydam, "	2 30
Laurel Hill Coal Company, per ton	2 55
Nelsonville Coal and Coke Company, per ton	2 40
Lyonsdale Coal Company, per ton	2 30

The proposal of the Lyonsdale Coal Co., at $2.30 per ton of 2,000 pounds, was accepted, and the usual bonds required.

On motion of Mr. Godfrey, the Executive Committee was directed to expend for the Horton Literary Society an amount equal to that heretofore expended for the Alcyone Society. Passed.

On motion, C. E. Thorne was authorized to improve the sewerage from the University Building by additional basin, or in such other way as he thinks best.

On motion of Mr. Jamison, it was agreed that the members of this Board visit the Agricultural and Mechanical College, near Lansing, Michigan, to gather information for action at the regular meeting in November next.

The Board then heard Prof. Mason on plans for opening and conducting the Art Department.

Board adjourned at 7 o'clock P. M.

Board met at time appointed.

Present—Messrs. Johnston, S. H. Ellis, Anderson, Jamison and Godfrey.

Mr. S. H. Ellis moved that the President of the Board, the Chairman of the Farm Committee, and President of the Faculty, be a committee to inquire for and report the name of a suitable man to fill the Chair of Horticulture and Botany.

The matter of providing the Janitor with a house was referred to the Executive Committee.

Mr. William A. Mason, Jr., was, on motion, duly elected to the position of Assistant Professor of the Art Department for the ensuing collegiate year, at a salary for the fall term at the rate of one thousand per

year, and after said fall term the salary to be fixed by the Board as they may decide best.

On motion, the Executive Committee was authorized to equip the Art Department.

Adjourned to regular November meeting, unless sooner called together by the President of the Board.